

## MILITARY MEDICINE

## ORIGINAL ARTICLES

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## The Tissue Bank of the Naval Medical School and You

By

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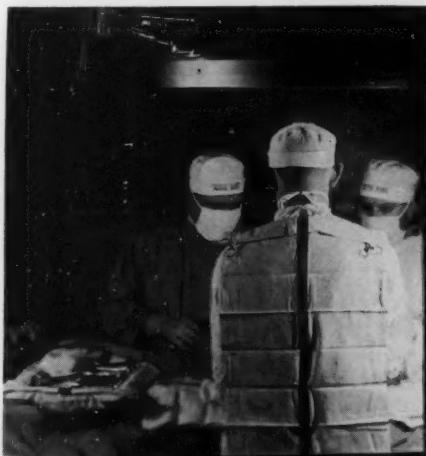
(With three illustrations)

**L**IZZIE King, five years old, was playing near a kerosene stove. Suddenly, her dress was aflame. Before the fire could be extinguished, she was horribly burned; she was at death's door. Her life hung in the balance for days. The doctors in attendance called the Navy Tissue Bank. "Can you help this child by supplying skin from the Bank?" Within hours, the requested skin was in the surgeon's hands. It was necessary to supply skin time and time again to sustain this child's life during the critical phase of her illness. When her general clinical condition improved, her own skin was grafted. She recovered.

Dramatic, yes, unusual, no. The Tissue Bank has responded to such emergencies as the USS *Bennington* disaster, the Chicago school fire tragedy, and many others, less publicized.

There is the case of the Naval aviator who suffered a compound fracture of the right

forearm when his plane crashed in Korea in 1952. Despite conventional treatment, a bony bridge grew between both bones of the forearm. This resulted in loss of the ability to rotate his arm. His disability forced him from active flight status. Following an oper-



The opinions or assertions in this article are the private ones of the authors and are not to be construed as official or reflecting the views of the Navy Department.

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ation in which the obstructive bone formation was removed and tissue-banked fascia lata (connective tissue) was placed between the forearm bones to prevent the bone from rebridging, full motion of his arm was restored. He was returned to full flight status.

Thus, we see that while many of the banked tissues that have been used are not of the life-saving variety, many people have been helped through the resources of the Navy's Tissue Bank.

It would, perhaps, be interesting to note how we were in a position to help little Lizzie King and others like her. It is because of people like yourself that such assistance is possible. Let us then discuss how such services have been provided by reviewing tissue banking as practiced by the Tissue Bank of the Naval Medical School and by presenting the interesting background and fundamentals of tissue transplantation.

Since it is only through you and for you that we exist, it is therefore important to attempt to answer the many questions posed by you who want to know more about our capabilities. Since this area has not been well defined, many mistakenly believe that tissue banks constitute a panacea for all manner of medical problems. They do not. If we define our present accomplishments, you will have a more accurate concept of tissue banking as we know it today.

#### HISTORICAL BACKGROUND

The concept of storing and transplanting human tissue was considered by medical investigators centuries ago, but it is only recently that we have accomplished correlatable and meaningful results. The efforts of earlier investigators varied from one-time experiments and other generally unproductive ventures which, while stimulating, were not clinically valid. In 1912, Doctor Alexis Carrel<sup>1</sup> reflected the aspirations of his predecessors and stimulated his followers when he advocated a stored tissue source for surgeons and attempted to preserve tissues. Subsequently, investigators made uncoordinated although noteworthy tissue preservation contributions consonant with their in-

dividual interests and the research facilities available for developing them. For example, cardiovascular surgeons preserved blood vessels; plastic surgeons, skin and cartilage; eye surgeons, corneas; and orthopedic surgeons, bone and fascia.

Historically, whole blood was the first tissue to be banked, processed and distributed successfully. Blood banks throughout the world are daily providing life-saving and vital supportive therapy to the sick. The need for blood procurement and transfusion is apparent and well understood. The need for tissue banks is slowly becoming recognized.

The Tissue Bank is the product of a continuing clinical research and developmental effort and was the first to form a practical serviceable unit. It utilized the previously unsubstantiated concepts of tissue preservation and centralized the effort to deal scientifically with all tissues that had clinical potential. This project was undertaken because a need was recognized. It was seen that stored tissue grafts could be useful not only in the treatment of war wounded, but also that tissue grafts could be effectively used in the treatment of the unfortunates of today's peacetime society. Man-made machines have produced the means of destroying life and limb. They have thus created an ever-increasing need for the replacement of human tissues.

We in the Naval Medical Department are proud to have pioneered new advances in tissue procurement, processing, banking and transplantation techniques. We are indeed privileged to have made our services available to those in need through our colleagues in both military and civilian medicine. Today, many of the practices developed by this bank have been standardized and used as prototypes by others. This is in keeping with our mission, which is a matter of research and development as opposed to merely mechanical or productive-type operation. In the last decade the transplantation of tissues has rapidly progressed by virtue of clinical accomplishment from a medical curiosity to a relatively common medical practice.

#### WHAT THE TISSUE BANK DOES

Let us briefly discuss what your Tissue Bank is and represents. The Tissue Bank, located in the Medical School Command of the National Naval Medical Center, Bethesda, Maryland, has been in existence since 1949. Compared with the medical progress in other new areas of investigation, progress has been rapid, surprisingly rapid in the light of the relatively limited physical facilities of our unit and the complexity of the problems of tissue banking and transplantation. The project has gained increased momentum as graft recipient cases have been evaluated in our Tissue Graft Registry. This Registry, the only one of its kind in the world, collects clinical information on a world-wide basis on each graft recipient so that the behavior of the graft can be studied and the results assayed.

Tissues currently procured, processed, stored, dispensed and used in patients are skin, eyes, arteries, bone, cartilage, fascia (connective tissue), and dura (the covering of the brain). These tissues are excised under sterile conditions from the recently deceased who expire locally from causes other than malignancies and certain infectious processes. The age of the donor is a limiting factor in tissue procurement since arteries and cartilage are of doubtful value from those over thirty-five years of age. The only other restriction is that the site of disease is entered only with the cooperation and advice of the pathologist. The manner of obtaining legally acceptable permission will be discussed later. The tissues are removed within twenty-four hours following death, providing the remains have been refrigerated. The one exception being the eyes; they should ideally be removed within seven hours following death, although they may be held for a time after removal before being transplanted. The time limitations are somewhat arbitrary and are predicted by the estimated rate of inevitable tissue decomposition following death.

Our Tissue Bank preserves most grafts by freeze-drying, a process which destroys tissue cell life. This storage principle, as

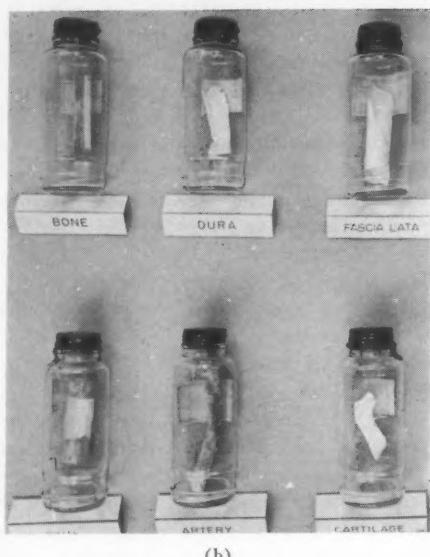
applied to human patients, is an original development of our group. Human tissues are also preserved in a living state by retention in nutrient media. The latter method keeps the tissues alive in a solution containing the ingredients essential for cell survival, but they can be kept viable for only four to six weeks. Freeze-dried tissues have obvious logistic advantages, for they can be retained in a vacuum on the shelf at room temperature until needed by the patient. No special handling is necessary in their transportation. The storage life is unknown but is estimated to be in excess of ten years. Figure 1 depicts a sampling of these tissues.

If the tissues are not living, one is prompted to ask, "How can they perform an effective clinical function?" The success of the homograft in the living patient, when inserted beneath the skin and thereby surrounded by host tissues, is dependent upon both the graft and the host tissue accomplishing certain functions. These biodynamic functions include biological acceptance of the graft; the ability of the graft to accept the necessary mechanical demands, such as motion and stress; the furnishing of an anatomical template or trellis for ingrowing host tissues to use as a guide for the re-growth of replacement tissues, and ultimately for the graft to be completely replaced by the host tissue.

The techniques thus far developed and standardized offer many patients relief from disabling and disfiguring conditions and, in some cases, have been life-saving. Patients who are blind have benefited through corneal and vitreous implantations; those who are burned, through skin grafts; those suffering certain bone abnormalities requiring surgical removal or repair, through bone grafts; those who are disfigured and disabled, through the grafting of cartilage and connective tissue. Fascia is often used for fascial slings and sometimes used to correct muscular limitations resulting from poliomyelitis. Those who have had the covering of the brain destroyed by injury, disease, or irreparable damage from surgery, can be helped through the use of dural grafts. Also,



(a)



(b)

FIG. 1. Tissue Bank Showing Method of Storing.

those who have blood vessel abnormalities may be helped by the removal of the diseased or abnormal part and replacement with a healthy banked transplant.

What can be done for the burned patient re-emphasizes the usefulness of tissue banks. A recent newspaper article stated: "Skin from over 80 volunteers was used in an

operation on a student burned critically in a laboratory accident. Doctors at Municipal Hospital said they grafted 625 square inches of living tissue on 19-year-old Bernard Wolters. The skin was donated by some (80) of his fellow chemical plant workers."<sup>7</sup> This skin roughly approximates less than the amount of skin shavings obtainable from one cadaver and stored in a tissue bank. Although it functions only as an excellent biological dressing, stored skin would have served the surgeon's purposes without the pain of removal and healing suffered by the living donors, while the extra time and effort of obtaining and preparing the tissue for use by the surgical team would have been saved.

At this point it would be well to make clear that the banked tissue transplant, usually the homograft, is not the ideal graft. By way of explanation, an autograft is tissue taken from one part of the body and transplanted into another part in the same individual; a homograft is tissue taken from one person and transplanted to another.

Although the autograft is the ideal graft, its use is often impossible or impractical. In those instances when the patient does not have the tissue resources to meet his clinical needs, when he is too young or too old to undergo the trauma of a secondary surgical procedure and associated blood loss, and where there are valid overriding medical considerations the homograft is the graft of choice.

#### LEGAL ASPECTS

The common law theory that no property interest inheres in a corpse prevails in most jurisdictions. This means that only the next of kin can make dispositional decisions. Notwithstanding this theory of law, the donor can normally have his tissue bequest honored unless there are overriding and compelling dictates, such as disagreement between the next of kin and family regarding the decedent's wishes, or where the decedent makes a dispositional direction that would contravene the public policy. Public policy means, for this purpose, those standards of decency and mores that are acceptable to

society and the community. It requires that there be no flagrant violation or disregard of the proper desires and sentiments of the next of kin.

The generally recognized order of relationship for dispositional purposes is as follows: The surviving spouse, children of proper age, parents, brothers and sisters, or more distant kin dependent upon such circumstances as special intimacy or association with the decedent. In each case, however, the facts must be weighed and the particular circumstances must control the practitioner's actions. In jurisdictions where the right to control disposition of one's remains is not governed by legislation, a decedent's expressed desires are entitled to respectful consideration on their merits, nothing else. How far the desires of the decedent should prevail against those of a surviving husband or wife is an open question, but such desires, especially if strongly and recently expressed, should usually prevail. Whenever there is a conflict over who has the authority to make dispositional arrangements, the tissue donation proposal is not made because, before such matters could be legally resolved, the tissue removal time would be exceeded.

In the Armed Services, commanding officers hold the authority comparable to the civilian coroners' in that they may direct autopsy of active-duty persons under comparable circumstances. This authority does not extend to authorizing tissue excisions and is not intended to conflict with civil interests. In fact, the military and civil authorities understand, respect and cooperate with one another in these matters.

Our society has recognized the need for increased medical scientific research and education. It is in the public interest to aid and promote advances in those fields which have such noble ends as the extension of life or the alleviation of suffering, debilitation and disfigurement. The responsible civil authorities are furthering these ends to an ever-increasing degree because they are aware of the proven clinical accomplishments of tissue banks, consider their projected ends reasonable, and recognize future

needs. Their recognition is demonstrated through their enactment of statutes for the use of unclaimed cadavers by appropriately controlled medical institutions for anatomical study purposes. The feelings that motivated the unclaimed cadaver laws are an index of the trend toward acceptance and legal recognition of the consent, whether ante- or post-mortem, to make disposition of the body, in its entirety, or in part, for scientific investigation, autopsy and homotransplantation purposes.

#### RELATIONS WITH THE NEXT OF KIN

The next of kin are sometimes concerned with the possibility of disfigurement in the tissue removal procedure. They are assured that the procedure is similar to a regular operating room procedure, and that, because of painstaking reconstruction processes, the areas to be viewed will not bear any outward manifestation of tissue excision procedures.

Another frequent consideration is a religious one. When one deals with matters connected with the disposition of loved ones, especially disposition where tissue removal is authorized, one naturally would deplore a conflict with the tenets and dogmas of his faith, no matter how noble their motives. It can be generally stated that leaders of the major faiths, the Hebrew, Catholic, and Protestant, not only express approval, but also encourage by proclamation and tacitness the use of the human body to save the life of other human beings or to diminish human suffering. Nowhere in the Bible, or in the Talmudic Hebrew writings, is there evidence that post-mortem examinations (or tissue donations) are prohibited by Jewish law. According to the traditional interpretation, which is not necessarily accepted by all Jewish groups, autopsies and transplantations of organs are permitted only in those cases where the decedent gives consent.<sup>2</sup> A very liberal and understanding approach to these matters is expressed in "A Teshuvah on Autopsy."<sup>3</sup>

The Catholic Church does not prohibit autopsy or tissue donation when the ends are morally justifiable.<sup>4,5</sup>

Similarly, there appears to be nothing in the writings of the Protestant clergy to prohibit autopsy or tissue donation. This seems a very proper and reasonable conclusion since these and the majority of the other religious groups do not prevent their followers from participating in the benefits of tissue and blood donations.

Of course, the purpose upon which this policy of permitting tissue excisions is based must possess scientific merit and not be mere experimentation. This, then, leads us to a matter of ethics on our own part. With respect to tissue transplantation, we who must procure, process, store or be instrumental in transplanting the tissue must perform in a manner that is most proper and shows respect and reverence for the sanctity of the remains.

Our motto is "Ex Morte Vita"—from death, life. We are concerned with the living and their need for assistance. The psychology of the blind person helps us to understand his needs for compassionate assistance and his gratitude upon receiving it. This is portrayed in the Gospel of Saint Luke, which contains a narrative of the blind man of Jericho, who, on hearing the crowd pass by, asked what it meant. He was told that Jesus of Nazareth was passing that way. Then he cried out, "Jesus, Son of David, have mercy upon me." The people commanded him to be silent, but he continued to cry out all the more, "Son of David, have mercy on me." Then Jesus commanded that the blind man be brought to him.

"What wilt thou that I do for thee?"

"Lord, that I may see."

"Receive thy sight, thy faith has saved thee." At once he received his sight and followed Jesus, glorifying God.<sup>6</sup> That cry, "Lord, that I may see," resounds in the ears and hearts of us all. The living who find surcease from pain and suffering are moved in the same way as was the blind man of Jericho.

This statement of the religious view is in no way to be construed as other than a reflection of our experience in dealing with

such matters, and the clergy are consulted whenever questions of a religious nature arise which are not immediately reconcilable.

Many people feel that broaching the autopsy and tissue donation subject at a time of immediate grief is inappropriate, and, in fact, some think it is irreverent and unethical. Contacts with the family are necessarily of a delicate nature. When we raise the question of a tissue donation we emphasize the need for objective thinking and thoughtfulness for our fellow man. Most next of kin have seen living evidence of people helping others, people they do not and will never know. Millions donate blood to give life to their anonymous neighbors. What difference does it make in what manner we show our desire to be humane? However, it does make a decided difference in the manner in which we show our desire to assist humanity in that we can accomplish tremendous good to society with one action when it is a thoughtful, considered act, such as a tissue donation.

Discussing permission for the diagnostic autopsy to determine cause of death is generally considered appropriate. The only difference between the two proposals is one of purpose. In both procedures tissues are removed. The authors have had experience in talking to hundreds of people about tissue donations subsequent to the autopsy request by the doctors on the scene when death occurs. Oftentimes the family grants permission for autopsy without a lengthy detailed explanation and discussion because the idea is associated in their minds with doing something proper and good. But, while the tissue donation proposal does not involve materially greater, and more frequently less, tissue removal, it must and should be explained in the specific and often lengthy detailed information necessary for proper understanding. The amount of explanation, however, has not apparently affected the agreeable responses, since about eight out of ten permissions requested are granted.

We suggest to the family that through their cooperation many unfortunate people will benefit, that in the case of skin trans-

plantation we may be able to supply life-saving aid to someone, that with their consent we will be able to prevent or ameliorate crippling and other disabling conditions, that we have been able to reduce and eliminate disfigurement of living persons through the use of certain of the tissues we ask them to donate. Most humans innately possess the virtue of empathy which motivates them to be compassionate to the distresses of others.

The following letter was received in answer to a letter originated by the Tissue Bank expressing thankfulness for a tissue contribution, and epitomizes our philosophy in the matter:

Cathedral Avenue  
Washington, D.C.  
2 April 1957

Dear Commander Hyatt:

Enclosed are the papers you asked me to sign. I wish I could impress on you in writing how deeply I appreciate your beautiful and understanding letter. Your thoughtfulness—delaying sending the papers and your deep feeling and understanding fills my heart with gratitude.

It is the greatest help to me to know and feel that in some small way that by my great loss others have gained. I know how much Admiral would have wanted this. His life was truly dedicated to helping others.

Sincerely yours,

/s/ E. G.

These thoughts express in a very personal way the motto of our Tissue Bank, "Ex Morte Vita." At this time 400 other donors have provided over 14,000 tissue deposits which have been used to sustain life in over 3,500 patients.

The question of payment for the tissue procured or dispensed may come to mind. Should there be any payment? It is quite possible that grave abuses could occur if payment were demanded, but it is not believed that every acceptance of or demand for payment is necessarily unethical. It may be commendatory for the donor to refuse compensation from the patient. It need not neces-

sarily be considered a fault to accept payment. The Tissue Bank's program in practice pointedly excluded monetary consideration in connection with its services and grafts. We feel strongly that the privilege of participating in the exchange of life and better health between the dead and the living is in itself sufficiently rewarding. Supplying our services is not considered a philanthropy, however, but is rather a humane service that accords with the spirit and tradition of the Naval Medical Department.

#### BEQUESTS OF TISSUE

How is advance provision made for automatic tissue donation in case of death? Advance arrangements by the donor for tissue donations, made prior to illness have obvious psychological advantages over the previously discussed methods of handling this humanitarian work. We can discourse at great length about the validity of ante-mortem agreements, and the recognition or non-recognition of such agreements in different states. The important thing that these agreements do is provide an expression of intent for those who must make dispositional arrangements upon death. Normally, the next of kin will fulfill the bequestor's known intent. Because of the need for immediate action within 24 hours the cooperation of the next of kin is necessary under normal conditions.

If you desire to make a tissue bequest, you should determine the nearest medical institution that is in a position to carry out your wishes. By making inquiry to your family doctor, your county medical society, the state official having jurisdiction over the public health and welfare, your local Lions Club, or the state anatomical board, if the entire remains are to be bequested for medical research and/or teaching purposes, you should be able to determine the exact information necessary to properly execute your tissue bequest. Copies of the bequest document should be provided for the prospective tissue procurers and all others who may be concerned with facilitating your intents. Those who are members of the armed forces

**TABLE 1**  
**AUTHORIZATION FOR TISSUE DONATION**  
**(Essentials of Standard Form 523B, BOB, reproduced here)**

In the event authorization for tissue donation is obtained by letter, telegram, or mechanically recorded telephone call, par. 1 and 2 shall be completed by hospital authorities and the letter, telegram, or memorandum confirming telephone call of authorization attached to this form for permanent file.

1. ....  
 (Name and location of hospital) Date  
 2. .... for donation to the Tissue Bank of  
 (Name of deceased)  
 ..... (Name of hospital) (specify tissue)

Authority is also granted to use the tissue in grafts upon living persons, or to dispose of the tissue in a suitable manner.

Witness .....	Signature .....
(Signature)	(Person authorized to give consent)
..... (Address)	..... (Address)
Authority to consent:	
..... (Relationship)	
Approved by .....	Commanding Officer

should assure that copies of the authorization are included in their service and health records. It is advisable to discuss your wishes with those responsible for your disposition and have them cosign your written expression of intent. Ideally, it should be notarized, but this depends on the legal requirements of the state where the agreement is made. Most jurisdictions that regulate tissue donation matters have made provision whereby that portion of your will which directs tissue removal is effective at once and need not be probated. Obviously, the time element for tissue excisions would negate your desires if the removal procedures were forced to wait pending probate.

When making a tissue bequest, you may designate the donee or expressly indicate the specific purpose for which your body or any part shall be used. This is not necessary. Moreover, it is sometimes impractical because the doctors may be thwarted, for many reasons, in fulfilling your wishes. Consequently, it could be administratively and legally difficult to use the tissue effectively unless your bequest makes specific provision

that the tissue may be utilized for some other good purpose, should your original intent prove not to be feasible.

Doctors, of course, must be protected from any liability for the execution of tissue donation arrangements. The type of authorization or consent to be obtained by the doctors and the hospital in order to protect them from civil liability arising from an authorized sterile post-mortem is an evidential matter. It should be well understood that as long as the doctor and the hospital receive authorization from the proper party, they are protected. It appears reasonable to infer that a person obtaining authority for tissue donation, acting in good faith, would be relieved of any liability; also, to believe that anyone who acts with such humane interests and performs his duties in a proper manner would be relieved chiefly because of the nobility and public interest of his purposes.

From a legal standpoint, can you donate your tissues during your lifetime? Certainly it would seem that you have a sufficient proprietary interest in your own body to be able to make a binding and testamentary disposi-

TABLE 2  
AUTHORIZATION FOR TISSUE DONATION BY DONOR  
(Essentials of Standard Form 523, BOB, reproduced here)  
(Same Form with modification)

1. ....	(Name and Location of hospital)	(Date)
2. ....	for donation to the Tissue Bank of	
	(Name of donor)	
	(Name of Hospital)	(specify tissue)

Authority is also granted for a diagnostic post-mortem examination.

Signature of .....  
Next of Kin. ....

Signature .....  
(donor) .....

Relationship .....  
Address .....

To all parties concerned be it known and I hereby direct that whatever measures are necessary to effect the above agreement are to be taken as expeditiously as possible. In the event of my demise the Tissue Bank (telephone number) is to be called immediately. (Include any other special arrangements that should be taken, e.g., notification of undertaker).

If the listed next-of-kin should predecease the donor, assure that the next immediate kin cosigns this, or a new agreement.

tion as long as the directed disposition does not offend recognized social proprieties. Many states have a legislative basis providing for tissue donation. If there is no such basis in your state then it is necessary for the next of kin to make the donation. The status of legislation in this area requires attention to meet the needs spoken for. A current, complete and detailed analysis of the status of the state laws on this matter is in preparation.<sup>8</sup>

#### PROPOSED LEGISLATION

What could be considered in the way of legislation to assist tissue banking purposes without conflicting with other proper interests?

1. Including in the controlling statute a proviso whereby tissue bequests, whether included as part of a will, codicil thereto, or otherwise, are effective immediately after death.

2. Make provision for tissue procurers to perform, concomitantly, full coroner duties and responsibilities. This would allow and expedite tissue procurement where both coroners and tissue bank doctors have a proper interest.

3. Relaxation of the administrative con-

siderations connected with the movement of remains between jurisdictions when tissue removal is involved.

4. Make statutory the acceptance and execution of ante-mortem tissue bequests.

5. As to the construction of the bequest, it should be specified that no particular form or words are required, but any signed and acknowledged written instrument shall be liberally construed so that the intent of the donor or testator is carried out.

In conclusion, it should be emphasized that "we do not work alone." This thought was given effect by a dedicated person responsible for continued guidance and encouragement to the Tissue Bank's mission since its inception, Rear Admiral Bartholomew W. Hogan, MC, USN, the former Surgeon General of the Navy. Credit is acknowledged to Rear Admiral Frank P. Kreuz, MC, USN, who fostered and guided initial developmental efforts and to our other seniors responsible for a policy course that has furthered our goal . . . to the funeral directors for their objective cooperation, to the pathologists for their understanding of our problems and their participation in our procedures without compromise to their own, to our many civilian and

military collaborators who use our tissues and report the detailed results so that we can in turn make meaningful extrapolations, improve our services as the clinical results and research studies dictate, and in turn provide the guidelines for the tissue banks of the future, to the Lions Organization for their dedication to the alleviation of blindness and their public education effort and organization of fellow Lions Clubs throughout the country that have so successfully supported their mission, and primarily and finally, all those who have shared their losses with us, and to those who, through themselves, will continue to make it possible for the medical profession to benefit others in the future.

Because of you, the many shadows of a virgin field are being lighted so that we can

not only help the Lizzie Kings of today, but lighted so that through untiring research efforts, we can in the near future offer hope to others whose bodies plead for restoration to health.

#### REFERENCES

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- <sup>3</sup> *Conservative Judaism*, Rabbi Isaac Klein, Fall, 1958.
- <sup>4</sup> *Medical-Moral Problems*, Gerald Kelly, S.J.
- <sup>5</sup> Address of Pope Pius XII, Cf. *The Linacre Quarterly*, August 1956, pp. 78-80.
- <sup>6</sup> Gospel of St. Luke, 18:35-43.
- <sup>7</sup> AP release dtd Sept. 59, Ludwigshafen release.
- <sup>8</sup> A Synopsis of the Medico-Legal Status of Tissue Banking, Transplantation and Allied Areas. Daniel N. Williams (In Preparation).



#### Synopsis-Abstract

#### INFLUENZA VACCINATION IN CHILDREN\*

J. J. QUILLIGAN, JR., PIERRE F. SALGADO, BARBARA ALENA

Influenza vaccine was given in one, two, and four-dose schedules to institutionalized mentally retarded children following the Asian influenza epidemic in 1957. The four-dose group received their last dose in August 1959. Antibody studies following each dose

of vaccine showed higher levels of antibody with 0.5 ml. dose subcutaneously than with 0.1 ml. dose intradermally. Asian influenza occurred in December 1959, and continued through February 1960. One hundred fifty-two unvaccinated controls had 79 acute respiratory illnesses; 113 of the four-dose group had 15; 87 who received one dose within six months had 29; 65 who received one dose six to twelve months before had 15; and 68 who received two or three doses had 20 with acute respiratory illnesses. A clear protective effect was demonstrated best with the four-dose schedule.

\* The full article is published in the May 1961 issue of the AMA *Journal of Diseases of Children*. Grateful acknowledgement is made to the authors and the American Medical Association for allowing publication of this abstract herein. This investigation was conducted under the auspices of the Commission on Influenza of the Armed Forces Epidemiological Board, and was financially supported by the Office of Surgeon General, U. S. Army, Washington 25, D.C.

## The National Guard Medical Service and National Defense

By

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A REVIEW of all wars in which the United States has participated reveals that they were entered without adequate preparation. The deficiencies of materiel, while recognized by both military and civilian observers, were much less serious than the deficiencies of manpower. National Guard personnel called into the Service lacked indicated training and were not physically qualified. While the National Guard medical service can do little concerning equipment deficiencies, even if the equipment were medical, it can correct certain personnel shortcomings.

In the past, National Guard medical service has been content to follow the traditional pattern of short term service with no thought of the indispensable contributions it can make to national defense. While these contributions will not be spectacular, they are fundamental and will increase in value as the phrase "first line of defense" takes on its true meaning. And these contributions may be the difference between victory and defeat in an undeclared war. Direct, thorough training for all Guardsmen in the basic areas of personal hygiene, sanitation, and emergency medical care is essential. The Medical Service would conscientiously administer approved immunization procedures for the prevention of communicable disease. It would limit the enrollment of men to those with sound physiques and a high level of intelligence. And in the medical detachments and other medical units, the enlisted men would be selected on the premise that they are capable of becoming Medical Service Corps officers in the event of a national emergency. At the same time, through the National Guard Selective Service Sections, it would initiate a research project on recruit selection whereby a con-

tinuing study would be made of registrants in an attempt to establish a device or standard sound enough to weed out in advance potential psychoneurotics and others likely to breakdown under the stress of military service.

It would be impossible to provide Army National Guard Service Units in sufficient size and with adequate numbers of doctors of medicine to be of value in providing patient care. Before the reorganization of the Army National Guard in 1959, approximately seventy-five percent of the openings for officers of the Medical Corps were vacant. While a more realistic and revolutionary assignment of medical service personnel and units in the Army National Guard is indicated, the scope of this paper will be limited to the fields mentioned above. These objectives may be accomplished with the TO & E as now constituted.

Experience in past conflicts points out that no one branch of the service can successfully cope with the problems of personal hygiene, sanitation, emergency medical care and up-to-date immunization. These problems recur with monotonous regularity. While a responsibility of command, the ultimate solution rests with the individual properly trained to realize the value. The combined civilian-military background of the Army National Guard makes this the ideal organization for the purpose.

Water supplies within the Continental limits of the United States have varying degrees of contamination. Some of the States have passed clean streams laws to assist cities and towns in their efforts to provide potable water for their citizens. In spite of this the number of cases of diarrhea, hepatitis, poliomyelitis and other water borne diseases are more prevalent than is com-

monly admitted in the majority of towns in the United States. It may be conservatively estimated that more than sixty percent of town and city water supplies are substandard. American travellers in foreign countries invariably suffer from intestinal upsets within a few days after their arrival due to the ingestion of impure water. The military history of every nation indicates that little progress has been made in stamping out the deaths and ineffectiveness of troops from preventable intestinal disorders. A medical reassessment of the causes of these conditions proves that, like the civilian traveller, they were due to the consumption of impure water. It is a well established fact that American soldiers in Europe in World War II just assumed that because water could be obtained from a faucet, it would be pure. If the Army National Guard Medical Service would direct its training to the end that all National Guardsmen would be pure water conscious, a great advance will have been made in the prevention of intestinal disorders. Properly sterilized Lyster bags should be the only water available for drinking during Armory drills and during field training in order to fix the importance of this as the only reliable source of potable water. The properly sterilized canteen should also be emphasized as the most important life saving equipment to be carried by the Guardsman at all times.

Environmental sanitation can never be brushed aside as too commonplace or that the modern Guardsman cannot take time from familiarization with modern weapons to learn the importance of proper waste disposal. Whether he lives in a modern barracks, occupies a lonely outpost, or is confined to a prisoner-of-war compound, the Guardsman must be so indoctrinated that he will automatically practice high standards of personal hygiene and sanitation.

The Army National Guard medical service should be composed of experts in military preventive medicine. With a definite limit in the number of professional medical personnel on the National Guard roster, it must be remembered that little can be ex-

pected from this service in the medical treatment facility field when Guard units are Federalized. With the prospects of nuclear weapons, incapacitating chemical, and infectious disease agents in future warfare, the most frequent and obvious causes of disease, disability and death are likely to be overlooked. Since the defense against the newer weapons systems resolves itself first, in extensive dispersion, and secondly, in high maneuverability of units and personnel, the preservation of life and health becomes more and more important on an individual rather than on a unit basis. No matter how visionary we may be as to the method by which future wars will be fought, manpower cannot be eliminated. Manpower must consume pure food and pure water; manpower must adhere to sound principles of sanitation. Manpower must observe the approved rules of personal hygiene. Manpower must be immunized against all diseases for which immunization procedures are indicated and effective. The National Guard medical service must assume that Guard manpower will be sent anywhere without advance notice.

With the continued growth of our population, professional medical manpower will be more limited than in the situation alluded to in 1959, hence each Guardsman must be able to render emergency medical care to himself or to his comrades. This does not mean that every Guardsman will be trained as a medical corpsman. It does mean that the medical service personnel of the Army National Guard would initiate, conduct and supervise a brief, thorough, non-technical, fundamental medical training program for the personnel of the entire Army National Guard covering emergency medical care, and, in addition, personal hygiene and sanitation. This training would be conducted on a continuing basis by thoroughly trained instructors and repeated once every six months as a refresher course.

Immunizations would be carried out by doctors of medicine using fresh vaccine. Medical Corps officers who have had a long period of service in the National Guard are

aware that nearly one hundred percent of the vaccines and sera used to immunize Guardsmen during peacetime were outdated or otherwise impotent before being administered. While the implementation of immunization procedures is also a command function, some system must be devised to make the individual responsible for and personally interested in his own current Standard Form 601. It is the practice to re-immunize all personnel as they enter upon extended active duty. How much better it would be to have all Army National Guardsmen enter Federal service with all immunizations complete and current for service anywhere at home and abroad. Whether United States troops land in Korea, Lebanon or any other foreign station, there is always the last minute rush to immunize them. Having a reservoir of Guardsmen already immunized would be a real contribution and would solve at least one portion of the preventive medicine problem of national defense. These Guardsmen could be transported to the trouble spots without delay.

Perhaps the greatest contribution the medical service of the Army National Guard could make to national defense would be the proper and accurate completion of Standard Forms 88 and 89. The Army of the United States when augmented by the Army National Guard has always had to weed out and reject the emotionally, mentally and physically unfit. The number of National Guardsmen, both officers and enlisted men, unable to qualify for Federal service in 1940 and 1941 exceeded fifty percent of those on the National Guard rolls one year prior to the call of the President in that emergency. Here were years of valuable training wasted on the personnel of the Nation's first line of defense. When the emergency came, those who should have been ready and qualified to train the selectees were physically unfit for service and had to remain at home.

Within recent years (1955), regulations covering the mental and physical qualifications of Army National Guardsmen have

become more exacting. Yet it is obvious that the critical shortage of Medical Corps officers and the unfavorable distribution of those active reflects itself in the substandard completion of Standard Forms 88 and 89. Commanding Officers and permanent duty personnel must have a required number of individuals in the unit in order to retain Federal recognition. It is not unusual for permanent duty personnel to perform "paper physical examinations" on recruits. It is also known that the office nurse of civilian physicians perform the same type of examination. It is natural that this variety of physical examination will omit essential information. All completed Standard Forms 88 and 89 should be reviewed by the Army National Guard medical service for inconsistencies, obvious errors and disqualifying defects and conditions. No one lacking the emotional, mental and physical qualifications required by the Regular Army should be accepted by the Army National Guard, since the peacetime Guardsmen today are the wartime Guardsmen of tomorrow.

It should be the objective of the Medical Service units of the Army National Guard to fill their ranks with enlisted men who could qualify as officers in the Medical Service Corps in the event of a national emergency. In this event, the Medical Department of the Army would have a pool of potential officers already trained and physically qualified for service.

If the Army National Guard could be depended upon to deliver the legal ceiling strength of the several states emotionally, mentally and physically qualified for general duty in the Army of the United States, the thought of sudden, unannounced attack would be less terrifying. If, in addition, these completely fit Guardsmen were ready for induction currently immunized and properly trained and indoctrinated in personal hygiene, sanitation and emergency medical care, the problem of training inductees delivered by the Selective Service System would be greatly simplified.

The contributions just enumerated may be termed routine and is in keeping with

the traditional mission of the National Guard. In the long history of National Guard medical service there has never been any provision for research. And it seems paradoxical to suggest that a research project could be carried out with the TO & E as now constituted. However, the Medical Corps officers of the Selective Service Sections of the Army National Guard as now organized could initiate and carry on a research project on recruit selection. It is well known that neuropsychiatric elements in patients represent the most perplexing situations found in civilian medical practice. From thirty to seventy percent of the ambulatory patients who visit the offices of doctors of medicine and from eighty to ninety nine percent of those who visit other less skilled healing arts practitioners do so because of complaints purely psychoneurotic in nature. More than fifty percent of all hospital beds currently occupied in the United States are occupied by persons having some form of mental or nervous disorder. The patient load in mental hospitals varies from one hundred to two hundred percent above that recommended for the medical and ancillary staffs.

During World War II, the largest number of rejections by the Armed Forces was in the psychiatric field. Army "sick call" was attended by thousands with psychosomatic conditions. It can be truthfully said that in the relative calm of civilian life and in military installations far removed from the rigors of the battlefield, the vast majority of patients are beset by and seek relief from emotional and personality disorders rather than the organic disease which may seriously cripple them or shorten their life.

The magnitude of the problem was recognized early in World War II, but there were never enough psychiatrists available for the time consuming examinations and interviews that were indicated for many recruits. Since the psychiatric examination was always part of the general medical examination, it was brief and superficial. In all instances the selection of recruits was developed under pressure. The psychiatric

examinations could not be detailed nor the recruit's history comprehensive. Speed was the primary consideration. Abbreviated records were kept. There was no coordination nor any attempt to establish a standardized system of interview. A "hit and miss" method prevented a clear personality picture from being obtained on any recruit since the findings of one examiner were never made available to another as soldiers were transferred from place to place. Even though tens of thousands were discharged from the Army during World War II for various psychiatric reasons, lack of accurate health records made comparisons impossible and conclusions nearly worthless. There has been no attempt to solve this problem on a scale large enough to be of significance. Yet military medical literature is replete with statements indicating the desirability of eliminating the maladjusted from the Armed Services.

No one questions the need of obtaining a clearer neuropsychiatric picture of those who are called upon to serve in the military forces of the Nation. It cannot be done by the Armed Forces even though they establish the standards of recruit selection. Isolated attempts to identify the maladjusted have thus far been unsatisfactory. The study must be nation-wide and all-inclusive.

The Selective Service System is the ideal organization to implement this project because its offices are located in nearly every county of every state. Each State Headquarters and each National Guard Selective Service Section have adequate and well-trained personnel. Every potential service man must register with the System when he attains the age of eighteen years. The registrant's medical history and inventory begun upon registration would be available for review and analysis from that time forward. The assembly line, hurry, hurry, ineffective psychiatric interviews and examinations would be eliminated.

With no increase in staff and little increase in expense for supplies, a psychological or personality questionnaire could be

added to the information now required of registrants. The initial record would begin with the local board of Selective Service requiring each registrant to complete a specially prepared outline of medical background questions. The summary of this information would be eventually placed on the registrant's SS Form 100. The information would be evaluated by the Medical Officers of State Headquarters and the Medical Corps officers of the National Guard Selective Service Sections. Assistance and advice could be obtained from the neuropsychiatric departments of the United States Army General Hospitals and the findings could be studied by the Surgeon General of any or all of the Armed Forces.

When an individual registrant entered the military service, a copy of his Selective Service Personality Questionnaire would be forwarded to the medical examination facility of the armed service concerned. In the event the registrant joined the National Guard or one of the reserve components, a copy of his inventory would be furnished to the Medical Corps officer making the physical examination. This copy would then be placed in the enlistee's 201 file. If the individual joined the National Guard or the Reserves before he became eligible to register, he would be sent to his local board to complete the inventory where the original would be retained until he registered with the System. Upon his registration, the inventory would be incorporated with his selective service records.

How the recruit adjusted or failed to adjust, together with the situations which produced unusual signs and symptoms would be added to his medical record. By carrying out this study during peacetime as a research project of Selective Service under the direction of the Medical Corps officers of the Army National Guard Selective Service Sections, reliable and valid information would be on file for everyone called into the service in the event of war. The last minute and often impossible attempt to gather information would be replaced by an authentic and positive appraisal of each recruit.

Vital and valuable knowledge would be ready for further study. The trial and error method would give way to scientific observation.

More medical information is required on one disorder now receiving the attention of a lay fund raising organization. Statistics indicate that Multiple Sclerosis is diagnosed about five years after the onset of the disease. It is known that the person with a multiplicity of complaints such as aches, pain and numbness of the extremities, extreme fatigue, weakness, inability to cope with everyday chores, who has dizziness, ringing in the ears and the like, is, for some reason susceptible to Multiple Sclerosis. In this one field of investigation, an inventory and carefully recorded medical history, plus a follow-up examination as would be done when a registrant enters the military service, may result in an early diagnosis. Or if discharged for neuropsychiatric reasons and the discharges receives a neuropsychiatric examination at certain intervals by the Veterans Administration, the findings may eventually solve the baffling etiological problems of this and other obscure diseases.

The inventory completed manually by each registrant on a specially prepared form 8½ inches by 11 inches would be the most economical system to use during the developmental period of the project. Nearly self-administering, supervision of the completion of the Special Form would be done by the Selective Service System clerk with no additional training necessary. As many as fifty registrants could complete the inventory at one time. Since one must have information on the CODE used in order to interpret the results, the score made would be meaningless at the local level, and thus would be confidential. Scoring would be done at the state level by the National Guard Selective Service Sections and the raw score returned to the local board through the State Headquarters to be entered on the registrant's SS Form 100. After the inventory is properly developed, machine answer sheets or cards could be used. In this event, scoring would be done by ma-

chine at the nearest office of Selective Service having the equipment.

In the past, most attempts to study neuropsychiatric conditions have been limited to those who have suffered a breakdown and little success has attended the meagre attempts to survey behavior in advance. With Selective Service registering every male as he reaches the age of eighteen years and having a personality inventory initiated at that time, the amount of truly useful medical information likely to be obtained will surpass any previous contribution to military medicine. If the research project continues for a long enough period, it is possible that sufficient information will be recorded from which a formula will be derived to permit the identification of the unfit before they enter the service. The results may even furnish very definite assurance that any recruit with a personality pattern called "X" will be able to continue service under the strain of combat duty. The time saved by eliminating the training of ineffective manpower, and the thousands kept off the pension rolls by knowing their psychiatric potentialities before their entry into the military service would save billions of dollars in pensions. In turn there would be fewer neuropsychiatric patients in veterans hospitals.

An inventory is not new to the Selective Service System. Under the Selective Training and Service Act of 1940, as amended, FORM 127 was completed by registrants. This form was used to obtain specific information on the occupational skills of registrants and was known as the Selective Service Occupational Questionnaire. Currently, Selective Service secures information from registrants in the following categories as part of the information recorded on SS Form 100:

- Series I Identification
- Series II Present Member of the Armed Forces
- Series III Prior Military Service
- Series IV Officials Deferred by Law
- Series V Sole Surviving Son

Series VI Minister or Student Preparing for the Ministry

Series VII Family Status and Dependents

Series VIII Present Occupation

Series IX Agricultural Occupation

Series X Education

Series XI Students

Series XII Citizenship

Series XIII Court Record

Series XIV Conscientious Objection to War

Series XV Physical Condition

The above information is provided by the registrant.

The Air Force, the Navy, and various industries believe that there is a high degree of correlation between the results shown by psychological tests concerning learning power, mathematical abilities, manual dexterities, field of interest, concentration, coordination and aptitudes, and the ability to become a pilot, a diver, a technician and the like (assuming the absence of certain physical defects and deformities). Statistics in this field have been growing for over fifty years. No progress has been made in correlating the emotional pattern and personality traits of an individual and successfully predicting his stability of behavior in the military service when subjected to undue stress. The recent monumental work on "Human Resources" is based on "historio-psychosomatics" of World War II manpower. This study serves to emphasize the importance of beginning now to seek the causes of the overwhelming neuropsychiatric breakdowns in military manpower during wartime service.

The so-called "epileptic equivalents" have occupied the attention of students of behavior interpretation for many years. Studies have been made, without success, to evaluate the significance of bedwetting beyond a specified age, of sleep walking, sleep talking, stuttering or other deviations from the normal. The paramount reason for failure has been the paucity of information over a long enough period of time and on a

sufficiently large number of individuals. With millions of registrants furnishing information that will be checked as they enter and leave the Armed Forces and with Selective Service analyzing the information gathered, eliminating duplication of effort and furnishing all interested agencies in the military and psychiatric fields with the findings, this research contribution has no limit of usefulness. It may find the formula by which only the stable and mature personalities will be selected for military service. All recognize that adequate manpower will pose a major problem in future conflicts. The unstable will be needed in some essential activity. Suitable identification of those with psychoneurotic potentialities will serve a double purpose. First, it will eliminate the constant repetition of thousands of costly and useless laboratory procedures and will prevent unwarranted hospitalization. Secondly, those with known emotional handicaps can be assigned to duties within their capabilities. In this vast unknown of neuro-psychiatric disorders that have plagued civilization since the beginning of time, we can safely assume that specific prevention and rational treatment depend upon a thorough understanding of the etiological factors and the pathological mechanisms involved. A research project in recruit selection may furnish the answer.

The Medical Service of the Army National Guard can make significant contributions to national defense by accepting only those personnel emotionally, mentally and physically qualified for Federal service as reflected in properly completed Standard Forms 88 and 89. Those on the rolls should receive adequate training and immunization to prevent or avoid health hazards at home and abroad. They should be skilled in the fundamentals of emergency medical care by a training program conducted by the Medical Service. All Army National Guard enlisted men of the medical units should be capable of becoming Medical Service Corps officers in the event of a national emergency. And finally, with the Medical Corps officers of the National Guard Selective Service Sections conducting a continuing study of recruits in an attempt to eliminate soldiers who cannot stand the stress of military service, no one could challenge the important role of the organization known as the MINUTEMEN.

Wellsboro, Pa.

**FLAG DAY—JUNE 14****PLEDGE OF ALLEGIANCE**

"I pledge allegiance to the Flag of the United States of America and to the Republic for which it stands, One Nation under God indivisible, with Liberty and Justice for all."

# The Radioactively Contaminated Patient Under Combat Conditions

By

CAPTAIN CHARLES E. CONER, MSC, U. S. Army\*

(With two illustrations)

## INTRODUCTION

WHEN an Army medical installation is located outside a fallout area and is receiving patients from the fallout area, the question of how to monitor and decontaminate incoming patients and vehicles, is presented to the hospital commander. In writing Standing Operating Procedures (SOP's) to cover the situation, it may be found convenient to use the descriptive phrase "CONDITION MAGENTA." (Magenta and yellow are the characteristic colors of the international radiation warning symbol: magenta 3-bladed propeller on a yellow background.) It should be emphasized that CONDITION MAGENTA refers to the case in which the hospital itself is not in a contaminated area. The only fallout contamination present is that brought in by patients and vehicles.

In order to provide a reasonable plan for CONDITION MAGENTA, the medical facility commander should understand the nature of the hazard to the contaminated patient, to medical attendants, and to other patients. The best basis for a plan is wartime experience, but fortunately for humanity and unfortunately for planners, there are no wartime experiences from which we may benefit. In fact few persons in the Medical Service have had any experience with practical radioactive contamination problems.

Contamination control programs which have proved to be suitable for weapons test-

The opinions expressed in this paper are those of the author and do not necessarily imply endorsement by the Department of Defense or the Department of the Army.

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ing activities and occupational health programs are not directly applicable to the radioactively contaminated patient problem. The contamination on the patient is a secondary complaint. He is not a patient because he is contaminated; the contamination is an extraneous factor and must be controlled accordingly.

## THE THREE KINDS OF RADIATION HAZARDS INVOLVED

The contaminated casualty presents three distinctly different potential radiation hazards: external gamma, skin contact beta, and internal hazards.

*The External Gamma Hazard.* This is the most widely known of the three. The material on the patient emits gamma rays in all directions, irradiating the patient and also persons in the vicinity.

*The Contact Beta Hazard.* The contact beta hazard exists only when fallout (particulate matter) is in contact with the skin. On the skin the short range, highly ionizing beta delivers a localized dose to the contact area which generally overshadows the associated gamma dose.

*The Internal Hazard.* If radioactive fallout material is swallowed or inhaled, the radiations subsequently emitted (principally beta) damage the body tissues.

## THE RELATIVE IMPORTANCE OF THE THREE HAZARDS

There is not the slightest doubt that the internal hazard is negligible. Calculation, animal experiments, and accident experience make it quite certain that under MAGENTA conditions, the internal hazard can be ignored. Its status as a significant MAGENTA hazard must be emphatically denied because there is, unfortunately, plentiful evidence of misunderstanding and exag-

geration of its importance. For example, some SOP's require donning the gas mask when handling a contaminated patient. Such action is entirely unnecessary and seriously decreases the efficiency of medical personnel.

The external gamma hazard also is negligible in CONDITION MAGENTA. This may seem surprising but it is true. In order to show why, let us consider a somewhat bizarre example of a situation in which the gamma field would present a real hazard.

Let us imagine a plot of ground which is completely covered by a human carpet, a single layer of men, all lying in the supine position and packed together like sardines. They are so tightly packed that they completely cover the ground leaving no earth visible (whether this is actually possible or not is not relevant).

After this human carpet is laid, a heavy fallout occurs in the area. After the fallout is complete, a dose rate measurement is made at a point, p, three feet above the center of the carpet. The dose rate is found to be 100 r/hr. Under these conditions it is known that the dose received at point p is due to gamma rays emitted by the portion of the fallout that is in the immediate vicinity. In fact 50% of the total dose comes from a circular area, around and under point p, having a radius of about 50 feet. (The other 50% comes from even farther away.) The area of such a circle is  $\pi \times (50)^2 = 7854$  sq. ft. Allowing 8 sq. ft. per man, we have about 980 men lying in this area.

Now let us suppose that these 980 men are wounded and that we will pick them up on litters and evacuate them all to the same field hospital. If we ignore the radiologic decay of the fallout and have not let any contamination brush off or fall off en route, then to reconstruct half of the original gamma hazard (50 r/hr) in the hospital area, we must lay the patients out in the hospital area on the ground exactly as they were before.

The point of this strange example is simply that bringing one, two, or even a dozen contaminated patients into a tent cannot

possibly create an external gamma hazard of any importance; it would take hundreds of men carrying all of their original contamination. If decay of the fallout during the patient transit time from field to hospital is taken into consideration, the resultant dose rate is appreciably decreased; particularly in the case of fresh fallout.

We are left then with the beta contact hazard. *This is the only radiation hazard that need be considered under MAGENTA conditions.*

The beta contact dose does not produce the radiation sickness syndrome.

It produces superficial skin burns, which in appearance are identical with ordinary burns. Beta particles will not damage any more than the surface tissues because their maximum penetration in tissue is about 5 mm. This type of skin burn is fairly well understood.<sup>1</sup> The length of time required to get an exposure which will result in a burn depends on the age of the fallout, but even fresh fallout requires several hours of contact to produce burns, and lesions may not appear for several weeks. The burns are localized at the points of contact with the fission product particles. Patients who are highly contaminated may experience an itching and burning sensation of the skin.

Fallout on the outside clothing will not produce beta burns. Only contact with the skin will produce a burn. However, fallout should be removed from clothing and equipment to obviate subsequent skin contact.

A radiac survey instrument such as the AN/PDR-27 does not measure skin or surface contamination in the same sense that it measures whole body gamma dose. We may see how this comes about by considering an analogy. Suppose that in Fig. 1 the radioactive fallout particle is replaced by a small piece of steel of the same dimensions. Let us suppose further that the steel particle is red hot. The probe of the AN/PDR-27 is replaced by a heat measuring device. The hot particle causes a small skin burn and at the same time causes the heat detecting device to show a reading of X units. Let us now imagine a similar situation in which the

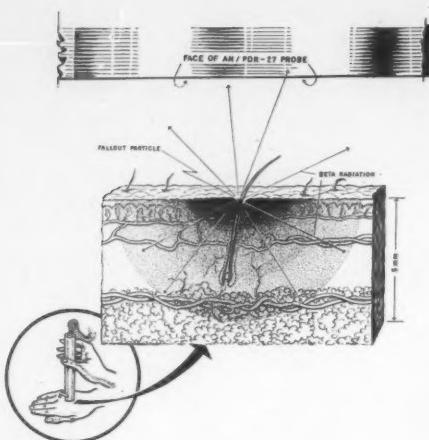


FIG. 1. Radioactive fallout particle strikes skin.

hot particle is replaced by a thin sheet of steel,  $2'' \times 2'' \times .001''$  laid against the skin. Again the steel gives off enough heat to cause the same reading of X units on the heat detector. But no burn occurs. The metal sheet may be only pleasantly warm. So the heat detecting device is, in this case, a poor measure of the hazard present.

Exactly the same reasoning applies to the AN/PDR-27 and a radioactive particle. The instrument cannot be said to "measure" the point contact beta hazard. It is only a rough indication of the presence of radioactivity.

When the same instrument is used to assess external whole body gamma dose in a contaminated area, the result is on the other hand a legitimate measurement. In this latter case the whole body volume and the entire volume of the AN/PDR-27 probe are being irradiated at the same rate.

Because of these facts it is obvious that in surveying for skin contamination, the instrument reading that is established as indicating an acceptable level of contamination must necessarily be arbitrary in nature. The exact reading that is chosen is of no fundamental importance.

In the interest of convenience it is reasonable to monitor the patient's shoes or clothes, and if an indication of contamination is found, conclude that it is quite likely

that his skin is also contaminated. If the contamination on the patient is so slight that it is not detectable by a cursory survey with an AN/PDR-27, it is of negligible importance.

#### CURRENT MISUNDERSTANDINGS

Field exercises in USAREUR (US Army, Europe) during the past four years have revealed widespread misunderstandings of the contaminated patient problem. These misimpressions are nearly universal and are accepted by many Army Medical Service Officers and CBR personnel. Rather than directing attention to the hazard to the contaminated patient, many persons appear to be primarily concerned with preventing the spread of contamination throughout the hospital. They seem to think that if the spread of contamination is not prevented, it will increase to such proportions that the entire medical facility will be endangered.

It is likely that the use of the word *contamination* suggests bacterial contaminations. Preventing the physical spread of bacteria is, of course, all important because bacteria have a self-multiplying capability. Spreading radioactivity about does *not* increase the total amount of activity; in fact the net hazard is actually reduced because the activity is necessarily less concentrated.

When questioned concerning the nature of the hazard from such gross radioactive contamination, non-commissioned officers often answer in generalities, saying that the hazard is the same one that would result if the medical facility were engulfed in the fallout. Ideas concerning inhalation hazards and wound contamination are even more vague.

Fears of widespread contamination are based in part on a misunderstanding of the distribution of radioactive material in a fallout field. If the fallout field were uniformly contaminated and clearly defined, and the hospital area were just beyond the fallout field perimeter as in Fig. 2 (upper section), we could expect that on vehicles, for example, whatever contamination (mud or dust) was not removed in transit from

the fallout field to the hospital might be deposited in the hospital area. Vehicles, however, on arriving at their destination do not shake themselves as dogs do on a rainy day. Consider the tracks that trucks will make on the road as they leave a muddy excavation area. By the time the trucks have gone one quarter mile down the road, nearly all of the mud that is going to come off the wheels and chassis has fallen in this distance. The trucks are still contaminated when they arrive at their destination five miles down the road, but the caked mud that clings to the trucks is not likely to cause significant contamination in the destination area. So, even if a fallout field were uniformly contaminated as depicted in Fig. 2 (upper), it is not likely that gross contamination would be spread at a distance beyond the fallout area. In the numerous tests at Eniwetok and Nevada, this has always been found to be so.

A fallout field, however, does not resemble the area in Fig. 2 (upper section); the contamination is not uniformly distributed. There is a hard core of heavy contamination surrounded by a much larger area more lightly contaminated as in Fig. 2 (lower section).

Consequently the distance from the area

of gross contamination to the hospital (which is considered to be outside the fallout area) is greater than in Fig. 2 (upper) and the probability of heavy fallout being tracked through the hospital area is small. The greater the distance from the fallout field to the hospital the less "tracked-in" fallout there will be.

Another current misunderstanding of the problem of the radioactively contaminated patient is a result of confusion between the three terms, "contaminated," "exposed" and "radioactive."

A patient who is contaminated has particulate radioactive material on his person.

An exposed patient has been subjected to invisible radiant energy (gamma and/or beta).

A live radioactive patient will never be found; to become radioactive (i.e., the body tissues become a source of radiation), he would have had to be exposed to many times the lethal dose of prompt neutrons.

A patient who is contaminated does not become radioactive. He has radioactivity (fallout) on his person but he himself is not radioactive. When the fallout is removed from his person, he is no longer a source of radiation.

A patient who is exposed to nuclear radi-

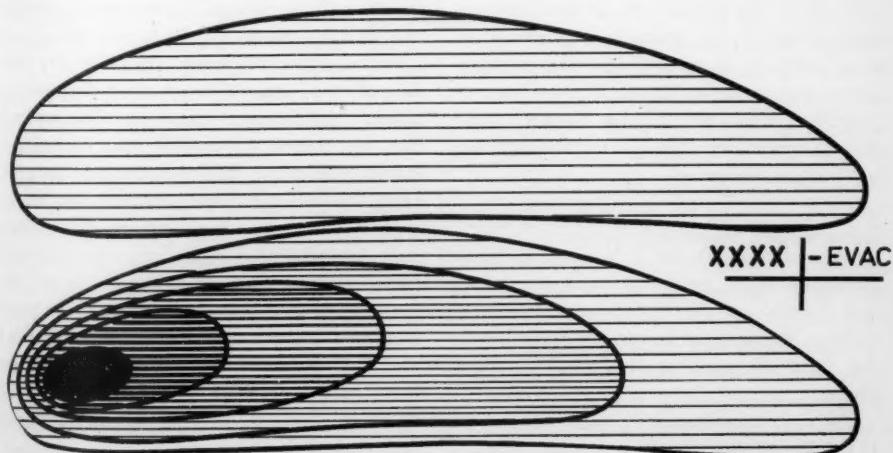


FIG. 2. (upper) Fallout field if uniformly contaminated. (Not factual). (lower) Fallout field as it actually occurs—areas of varying intensity.

ation sustains tissue damage but he does not become a source of radiation (radioactive) any more than a patient who was burned becomes a dangerous source of heat, inflicting burns on persons nearby. Neither should the exposed patient be confused with the contaminated patient. The exposed patient may or may not be contaminated.

#### CONTAMINATED VEHICLES

Contamination on a vehicle, like that on the outside of clothing, is a hazard only when it comes into contact with skin. The decontamination of a vehicle should depend upon what use is to be made of the vehicle. The contaminated parts which come into contact with the driver's, passenger's, or repairman's hands should be decontaminated. For example: the driver should wipe off the steering wheel, the gear shift, his seat, exterior door handles, etc., if they are contaminated. He should wear gloves when he changes a tire or if he has no gloves he should wipe off his hands and wrists after he has finished his job.

It is extremely unlikely that a vehicle could retain enough contamination to constitute a significant external gamma hazard to the occupants. This fact may be appreciated by reflecting on the "bizarre example" discussed above.

In all of the bomb tests to date, vehicles coming out of the contaminated area have been routinely monitored and the contamination found to be a minor one even by peacetime standards. Under combat conditions it might even be ignored without any serious consequences.

#### A PRIMER ON THE CONTAMINATED PATIENT

The answers to the following questions are based upon preventive measures which deal directly and realistically with the radioactively contaminated patient problem in the light of wartime field-medical conditions.

*What is a radioactively contaminated patient?* A patient who has radioactive material (fallout) on his person or clothes. For practical purposes he may be identified as

a patient whose degree of contamination is such that an AN/PDR-27 (the standard, low dose rate meter) indicates a midscale reading on the 0.5 mr/hr scale or the 5 mr/hr scale when the unshielded probe is held 6 inches from any surface of the patient's skin or clothes. The choice of whether the 0.5 mr/hr or the 5 mr/hr scale should be used will depend on the ambient radiation background (see details on page 2 of appendix A). If the background is too high to use the 5 mr/hr scale, it will not be practical to identify the contaminated patient by radiation monitoring. It will also not be necessary in most cases since the medical facility itself will be in the fallout and everyone associated with it will be contaminated to a degree.

*What is the dominant hazard to the radioactively contaminated patient?* The contact beta skin burn is the hazard which may result in the patient becoming less combat effective. It is this hazard that must be the focus of the policy and plan for handling radioactively contaminated patients.

*What should be done to prevent beta burns?* The exposed parts of the patient's body should be washed. Contaminated outer clothing should be removed so that the contaminant will not subsequently come into contact with his skin. Decontamination should not be delayed unnecessarily but it need not be done on a crash basis either.

*What decontamination facilities are required?* No separate or special decontamination facilities are required. The patient may be tagged or marked by the radiac monitor before or during sorting so that his early decontamination will not be overlooked and so that his contaminated clothes may be separated from the noncontaminated clothes. Decontamination should be accomplished on the ward or any other place where it is convenient to wash the patient and remove his clothes. The visible dirt on the blanket and litter should be brushed off or damp sponged. The blanket or litter may be reissued if necessary.

*Is there any advantage in monitoring patients at a CBR tent on the perimeter of the*

medical facility area? If the use of chemical agents justifies the off-loading of all incoming patients at a perimeter CBR tent for chemical monitoring, then fallout contamination monitoring and tagging could be accomplished at that time. If chemical monitoring does not require off-loading of all incoming patients, off-loading for fallout contamination monitoring would not be advisable.

*Is the use of the shower desirable in decontaminating the radioactively contaminated patient?* The use of the shower is inconvenient for the patient and the medical attendants and it is unnecessary and inefficient as a means of decontamination. Sponge bathing, the normal procedure in fixed and field hospitals, will readily remove all significant fallout from the exposed surfaces of the body without spreading the contamination to the uncontaminated parts of the patient's body.

*Is there a danger to medical personnel handling the patient?* The chief hazard to handling personnel is identical in nature with the patient's hazard; that is, contact beta burn. The degree of hazard however is greatly decreased because the quantity of fallout transferred from the patient to the handling personnel will be only a small fraction of that on the patient. Transfer will occur principally on the hands. The duration of contact with the fallout will be short; not because medical personnel do not get their hands dirty but because they have washing facilities and commonly maintain cleanliness for other reasons.

*What will be the probable degree of patient contamination?* There will, of course, be all degrees of contamination but there are some general observations which may shed some light on the probable distribution. First, a glance at fallout patterns from test weapons indicates that there will be a large area which is lightly contaminated and only a small area which is heavily contaminated. So, other conditions being equal, we can expect to find more patients lightly contaminated than heavily contaminated. Second, it is reasonable to expect that the

grossly contaminated areas will be avoided when possible. Third, in muddy and dusty fallout areas we would expect to find increased contamination on the patient.

*Is it necessary or advisable to decontaminate ambulances and other vehicles?* No effort or time should be expended in either monitoring or decontaminating vehicles unless it is apparent that they are going to be used in noncontaminated areas for reasonably long periods of time. The parts of the vehicle that come into contact with the hands should be wiped off prior to handling.

*What preventive measures can any field soldier take to protect himself from beta burns?* Beta burns result from continued skin contact with fallout. The field soldier should brush the fallout from his clothing and wash mud and dust from his skin when the conditions of battle permit. He should, however, not be preoccupied with this task because in a lightly contaminated area the hazard is a nuisance only and in a heavily contaminated area the whole body gamma exposure requires his almost exclusive attention. If the soldier were provided with a chemically treated washcloth (similar to the commercial "Wash 'n' Dri" device), he could clean his hands, wrists, face, and neck when the urgency of battle permitted. Such a device could be included, at little cost, in the field ration.

*How does the problem of the contaminated soldier compare with the problem of the contaminated patient?* The problems are identical but the soldier is able to take care of his own decontamination whereas the patient will in some cases not be able to decontaminate himself.

*What should be done about contamination in the hair?* With the good helmet discipline that we have had in the past, this should not be common. However if it occurs, it presents a special problem. One should first remove all contaminated clothing and wash the skin except the scalp. If, after this is done monitoring reveals fallout in the hair, then the hair should be clipped close and scalp should be washed if possible; but one should not risk the patient's life to do so,

since the penalty for not decontaminating the scalp is of secondary importance. Beta emitters on the hair, but not in contact with the scalp, are not an immediate hazard.

*What provisions should be made for the contaminated patient in the mass casualty situation?* If the prevention of the minor hazard results in a delay of essential treatment, decontamination should be deferred.

*Summary of Primer.* The primary radiation hazard to both patients and the personnel of the field hospital is the contact beta burn.

The normal washing procedures and clothing changes which are routinely accomplished in the field hospital will provide adequate protection to the patient against the contact beta burn.

The normal housekeeping and aseptic practices followed in a field medical facility will provide adequate protection to the medical personnel.

#### FALLOUT CONDITION

In the military, FALLOUT CONDITION is usually said to exist when the gamma dose rate is 1 roentgen per hour or greater. With regard to monitoring patients for detection of contamination, it would be better to apply a more stringent definition. FALLOUT CONDITION may be identified by a dose rate in the general area of the medical facility of such a level that identification of the contaminated patient cannot be accomplished without benefit of a fallout shelter.

In the FALLOUT CONDITION the prevailing high dose rate background masks the low dose rates emanating from the fallout contamination on the patient's clothes. Trying to identify a contaminated patient in the FALLOUT CONDITION is like trying to locate a firefly in the day time.

If there is a convenient fallout shelter which will reduce the FALLOUT CONDITION dose rate to less than 1.5 mr/hr, the contaminated patient may be identified in the shelter and cared for in the same manner as under CONDITION MAGENTA.

The medical facility commander may

choose to consider all incoming patients contaminated in the FALLOUT CONDITION. The resulting workload would not be prohibitive.

#### RELATION TO THE CBR SCREENING POINT

It is common practice to establish a CBR Screening Point downwind from the sorting area and funnel all incoming patients through it. It is not within the scope of this paper to discuss BW and CW; however, it should be pointed out that as far as radioactive contamination is concerned, a separate screening point is not necessary. Monitoring for fallout can be done in the sorting area (see Appendix A).

When the screening point is necessary for CW detection and decontamination purposes, it does not follow that all the radiological detection and decontamination must be done there. To do so may result in serious delay in treatment. Radioactive contamination can be taken care of by tagging and washing at a later and more convenient time (see Appendix A).

#### CONCLUSIONS

It is unlikely that large numbers of grossly contaminated patients will be presented to the military medical facilities.

Primary consideration in planning should be given to the prevention of beta skin burns.

The usual bathing procedures followed in a medical facility will effectively decontaminate the patient.

Baseless fears of gross contamination in medical areas should not be allowed to hamper patient care.

#### REFERENCES

- <sup>1</sup> Cronkite, E. P., ed., Report by the U. S. Atomic Energy Commission, "Some Effects of Ionizing Radiation on Human Beings," July 1956.

#### APPENDIX A

##### ESSENTIAL ELEMENTS TO BE INCLUDED IN AN SOP FOR HANDLING RADIOACTIVELY CONTAMINATED PATIENTS IN A FIELD HOSPITAL

###### I. Purpose.

The purpose of this SOP is to protect the patients and medical personnel in the Field Hospital from harmful effects of fallout contamination.

## *II. Application.*

This SOP will be executed upon receipt of notification that CONDITION MAGENTA is in effect. CONDITION MAGENTA means that the hospital is receiving patients who are contaminated with fallout but the hospital itself is not in a contaminated area.

## *III. Caution.*

These Standing Operating Procedures deal with a minor hazard. If the procedures result in a delay of essential treatment, they will be discontinued at the discretion of the commanding officer.

## *IV. Procedures*

### *A. All Personnel.*

All personnel except those who are assigned duties by this SOP will continue their normal duties without regard for the radioactively contaminated patients. The provisions of the SOP will insure adequate protection to the patients and all medical personnel.

### *B. Radiac Monitors.*

#### *1. Number of monitors—2.*

#### *2. Special clothing—none.*

#### *3. Equipment: AN/PDR-27, c/w case (2 each)*

#### *4. Report to: Receiving Station Duties:*

a. Check the AN/PDR-27 with the test radioactive source. If it is not functioning properly, replace the batteries or tubes as indicated.

b. Measure the background radiation with the beta shield removed from the probe. The background will determine the exposure dose rate at which a patient will be tagged as a contaminated patient in accordance with the following rules:

(1) If the background is less than or equal to 0.15 mr/hr: 0.3 mr/hr or greater indicates that the patient is contaminated.

(2) If the background is greater than 0.15 but less than or equal to 1.5 mr/hr: 3.0 mr/hr or greater indicates that the patient is contaminated.

(3) Background greater than 1.5 mr/hr: All incoming patients will be considered to be contaminated. Inform hospital commander that FALLOUT CONDITION is in effect.

c. Monitor all incoming patients using headset. Scan patient with unshielded probe at 6" from patient's body. Pay particular attention to the shoes. If the reading is 0.3 (see above) mr/hr or greater, write "Fallout Contamination" on the patient's EMT.

d. Twice daily the chief monitor will ascertain that one monitor goes through the hospital and checks each contaminated patient. If the patient is free from contamination, his EMT will be marked "Decontaminated—date and hour" beside the phrase "Fallout Contamination." If the patient is not free

from contamination, the nurse in charge will be informed.

e. The monitor who is dispatched through the hospital will monitor litters and other items which have been decontaminated and will release those items found to be uncontaminated and return those items which have been ineffectively decontaminated to the persons who have responsibility for their decontamination.

### *C. Responsibilities of Persons in Charge of Wards:*

1. All incoming MAGENTA patients will be bathed as soon as practicable. Particular attention should be paid to the parts of the body that are normally exposed. The patient's hair will be monitored by the radiac monitor after the rest of the head and neck have been washed. If the scalp is contaminated, the hair will be clipped and scalp will be washed.

2. The patient's clothes, washcloth, towel and blanket will be placed in the MAGENTA hamper. The hamper need not be removed immediately from the ward area.

#### *3. MAGENTA Litters:*

a. If the patient is to remain on the litter, brush off dust or mud and damp sponge handles with washcloth.

b. If the patient is removed from the litter, set the litter aside. It should be washed by the personnel who customarily wash soiled litters. After it has been monitored by the radiac monitor and found to be effectively decontaminated, it should be returned to general use.

4. MAGENTA patients need not be isolated from other patients either before or after bathing.

5. Questions concerning contamination should be directed to the radiac monitor who will report to each ward twice during each day.

#### *D. MAGENTA Clothes Handlers:*

1. A detail from supply will collect MAGENTA clothing on the wards twice daily.

2. MAGENTA clothing will be kept in a separate container.

3. The disposition of clothing will depend on Quartermaster plans for support of the hospital but in general the following paragraphs will apply unless contrary orders are issued.

a. Serviceable clothing will be turned in to the Quartermaster Laundry identified as radioactively contaminated clothing.

b. Serviceable boots that are to be returned to patients: Discard shoelaces, scrub exterior surfaces with scrub brush and hot soapy water without needlessly wetting the inside of the boot. Radiac monitors will check boots before reissue.

c. Unsatisfactory clothing and boots will be turned in to the QM Salvage Collecting Point identified as radioactively contaminated items.

4. Avoid unnecessary occupancy of areas within 6' of filled bags of contaminated clothing or boots.

# The Organization, Objectives and Services of the Pharmaceutical Manufacturers Association

By

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THE Pharmaceutical Manufacturers Association is a nonprofit, scientific, professional trade organization of the makers of prescription drugs. It was established in March 1958 to succeed two pre-existing groups, the American Pharmaceutical Manufacturers Association and the American Drug Manufacturers Association. These two organizations, which were founded about 50 years ago, served the industry well during its formative period, but with the unprecedented growth of the past few years, duplication of membership, activities and functions occurred.

Efforts to unite the two organizations began in 1956. Though little progress was made in the beginning by a joint committee of the two associations, success came two years later through action of a group headed by William B. Graham, president of Baxter Laboratories, who later was elected chairman of PMA. Dr. Karl Bambach, executive vice president of the former American Drug Manufacturers Association, with headquarters in Washington, and Dr. J. O'Neill Closs, executive vice president of the American Pharmaceutical Manufacturers Association in New York, were named executive vice president and administrative vice president respectively, of the new organization.

Membership in PMA is voluntary and includes 140 firms engaged principally in the production of ethical drugs—those which are primarily advertised to physicians, dentists and veterinarians, and which are prescribed and administered by them and dispensed by licensed pharmacists. Of all pre-

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scription drug manufacturers in the United States, PMA members account for about 95% of sales. Yet in this highly competitive industry, no single company has more than 10% of this business—and the leadership often fluctuates with the introduction of new and better prescription products.

The policy-making and governing body of the Pharmaceutical Manufacturers Association is its board of directors, headed by a chairman who is elected to serve for a period of one year. The present chairman is Harry J. Loynd, president of Parke-Davis, and the chairman-elect is Eugene M. Beesley, head of Eli Lilly. The board is composed of not more than 33 or less than 21 elected executives from the member companies. Each holds office for three years and has one vote. The board meets at least four times a year. The Association itself sponsors one annual meeting for its members, and in addition conducts three yearly regional meetings held in the eastern, central and western parts of the country. PMA does not engage in lobbying activities and is not registered as an official lobby group. Likewise, the Association does not concern itself with the products, prices, distribution or sales policies of its individual members.

One of the first official acts of the board of directors of the new Pharmaceutical Manufacturers Association was the adoption on May 24, 1958, of a statement of Principles of Ethical Drug Promotion. This was done with full recognition of PMA's responsibilities and obligations to promote public welfare and to maintain honorable, fair and friendly relations with the medical profession, the associated sciences and the public.

These principles are:

1. Prompt, complete, conservative and accurate information concerning therapeutic agents shall be made available to the medical profession.

2. Any statement involved in product promotional communications must be supported by adequate and acceptable scientific evidence. Claims must not be stronger than such evidence warrants. Every effort must be made to avoid ambiguity and implied endorsements. Whenever market, statistical or background information or references to unpublished literature or observations are used in promotional literature, the source must be available to the physician upon request.

3. Quotations from the medical literature or from the personal communications of clinical investigators in promotional communications must not change or distort the true meaning of the author.

4. If it is necessary to include comparisons of drugs in promotional communications, such comparisons must be used only when they are constructive to the physician and made on a sound professional and factual basis. Trademarks are private property that can be used legally only by or with the consent of owners of trademarks.

5. The release to the lay public of information on the clinical use of a new drug, or a new use of an established drug, prior to adequate clinical acceptance and presentation to the medical profession, is not in the best interests of the medical profession or the layman.

6. All medical claims and assertions contained in promotional communications should have medical review prior to their release.

7. Any violation of these principles brought to the attention of the President of the Pharmaceutical Manufacturers Association shall be referred by him to the Board of Directors.

By the time of the first annual meeting of the fledgling PMA in April 1959, the new organization was recognized as the spokesman for the prescription drug industry. Its purpose and objectives had been carefully phrased in the articles of incorporation and bylaws, and had been promulgated to all members. Of these, four are notable for expressing succinctly the reasons for PMA existence. They are:

"1. To encourage consistently true stand-

ards of potency, quality and purity for pharmaceutical and biological products for cure, mitigation, treatment, prevention or diagnosis of disease;

"2. To encourage research toward development of new and better medical products, better facilities and methods for the pharmacological and clinical evaluation of them, and safer methods for their manufacture, packaging and transportation;

"3. To disseminate information to and in behalf of the pharmaceutical industry concerning government regulations and policies and other subjects of interest to the industry; and

"4. To work constantly and closely on a very broad front with other professional associations or groups in the health field, with allied industries and with government authorities for the advancement of medical science."

Because of the rich reservoir of biological and medical personnel in the laboratories of its member companies, PMA displays a brighter aura in the field of scientific research and development than other professional trade organizations. This is further emphasized by the fact that the prescription drug industry devotes a greater share of its income to research than any other industry. In 1959, the average research costs of all U. S. industry are estimated as about 3.3% of sales while the ethical pharmaceutical manufacturers spent \$197 million in a search for new and better drugs—a record 8% of gross income. This was an increase of 16% over what the industry spent in 1958 but only a fraction of what will be required 10 years from now when yearly research budgets are expected to reach between \$400 and \$500 million.

By means of such vast expenditures, more than 100,000 chemicals, compounds and other substances were prepared and biologically tested during 1959 in the search for better and more specific medicinals. Of these substances, 36,000 were in the field of cancer chemotherapy. The second heaviest concentration was 28,200 substances pertaining to allergies and infectious diseases. Of these more than one hundred thousand

substances, less than 2,000 showed sufficient promise to test in human studies, and probably only a small number of these will ever be marketed. In 1958, out of many thousands of substances tested, only about 40 became marketable drugs. Such are the labors and risks of modern medicinal research.

Of the total amount expended by the industry for research and development last year, more than \$18 million was in the form of contracts and grants to medical schools, hospitals, and academic research institutions. In 1960 PMA members are estimating they will spend \$214 million for research.

A survey of scientific personnel made in 1959 revealed that more than 2,000 scientists in PMA member companies are PhDs or doctors of science. Nearly 400 were doctors of medicine. Slightly over 100 were doctors of dental surgery or of veterinary medicine. In excess of 4,000 had Master's or Bachelor's degrees in the biological sciences. In addition to this group, nearly 5,000 technicians assisted scientific personnel in research and development tasks and another 4,300 technicians were engaged in quality-control and production problems. This brings the number of scientific and technical personnel in the prescription drug industry to more than 15,000.

Under the effective policies, delineated by the board of directors, PMA conducts its activities principally through ten specialized groups of its members, known as sections, with the assistance of its permanent staff here in Washington. There are ten such sections. PMA member firms may designate representatives to each, but a company may have only one vote in a section. The actions and recommendations of sections, each of which is headed by a chairman, appointed annually, are subject to the approval of the board of directors of the Association. In addition, a member of the board is appointed as a liaison member to each section.

Five of the ten sections of PMA are composed of scientific and professional personnel. These are:

1. Biological Section. This group of biol-

ogists, chemists, biochemists, veterinarians, pharmacologists and other scientists in related fields is concerned with technical problems arising in products licensed to the National Institutes of Health and the Agricultural Research Service and in other biological substances. It is specifically concerned with sterility tests, pyrogen standards, biological standards, blood products and derivatives, microbiological and pharmacological assays and biological manufacturing problems of general interest. Through its various committees it maintains liaison with the National Institutes of Health and the Agricultural Research Service.

2. Medical Section. This is a group of physicians who are employees of member companies. The section is devoted to clinical research problems of general interest, medical department administration, relationship of the company medical department with other departments, relationship of the drug industry with professional societies, medical aspects of governmental evaluation of new drugs, medical manpower problems, and specific clinical and pharmacological research projects supported by the Association.

3. Pharmaceutical Contact Section. This group is composed of chemists, pharmacists and other scientists working on drug standards, and devoted to cooperation with the Food and Drug Administration, the U. S. Pharmacopeia, the National Formulary, and other groups in developing standards and methods of assay for non-biological pharmaceutical products. In addition, this section is concerned with quality control procedures, maintenance of sanitary conditions, quality control administration, and the relationship of the quality control department to other company departments.

4. Production and Engineering Section. This group of administrators, engineers and plant superintendents is concerned with production and its related problems of engineering, maintenance, packaging and safety. It maintains relationship of the production department and other company departments, and is further concerned with inventory and production control, production manpower problems, materials han-

dling, automation, plant expansion problems, production equipment and special production techniques.

5. Research and Development Section. This important section is composed of research administrators, chemists, pharmacists, pharmacologists, biologists, physical chemists and other scientists whose primary interests are in the research field. The problems studied include administration of the research department and its relationship with other company departments, scientific manpower problems, pharmaceutical applications of physical chemistry techniques, physical chemistry laboratory equipment, distribution of physical chemistry data, organic and biological chemistry problems of general interest, scientific literature, indexing and retrieval of information, pharmaceutical development problems of general interest and new materials and techniques in pharmaceutical development. It maintains liaison with governmental research groups, particularly in the National Institutes of Health and the National Research Council, and is constantly alert to those research and pharmacological problems connected with the governmental evaluation of new drugs through animal testing and screening techniques.

The remaining five sections are devoted to industrial and administrative matters of the Association and their activities can be generally identified from the names of each. They are the Financial, International, Law, Public Relations and Transportation Sections.

Whereas each of the periodic sessions of a PMA section is comparable to a national scientific meeting and is attended by several hundred members, its business and communication during the year is conducted by a number of responsible committees. In the Medical Section, separate committees are devoted to such important areas as Evaluation of Psychotherapeutic Drugs; Review of Interpretative Statements Reference Warning on Drugs; Devices and Cosmetics for Over-the-Counter Sale; Review Safety Data Required for New Drug Application; Training for Clinical Research; Professional Relationships; Cardiovascular Agents; Medical Writ-

ing Practices; Uniform Reporting of Drug Data to Poison Control Centers; Hospital Staphylococcal Infections; Liaison with the American Medical Association Council on Scientific Assembly; Blood Dyscrasias; Medical Careers in the Pharmaceutical Industry; and Drug Addiction and Habituation. In addition, this section supports two fellowships in clinical research, maintains close and active liaison with several national medical groups, especially the Association of American Medical Colleges and the American Academy of Medical Educators and, unlike the other sections, holds a one-day interim session each year on the first day of the annual meeting of the American Medical Association. At the 1960 meeting of the medical section, the extensive program included presentations by Dr. E. Vincent Askey, then president-elect (now president) of the American Medical Association, Dr. Cleon A. Nafe, member of the AMA Board of Trustees, and Dr. William M. Kessenich, medical director of the Food and Drug Administration.

The staff of PMA at its headquarters in Washington includes a small but diversified group with experience in the fields of medicine, pharmacy, chemistry, economics, teaching, writing, editing, reporting and association administration. This staff is under the direction of the Association's fulltime president, Dr. Austin Smith, former editor of the *Journal of the American Medical Association*.

By implementing the policies of the board of directors and carrying out the recommendations of the various sections, the staff and PMA committees provide a variety of services to the Association's members and to others. It sponsors two important publications, the periodic PMA *Bulletin* devoted to information concerning activities within the pharmaceutical industry and the weekly PMA *Newsletter*, which covers specifically the Washington and governmental aspects of the industry. A new monthly publication, *Medicine at Work*, is scheduled to appear in January. Its title and idea are not new. Beginning in 1956, this appeared as a regular department in the *Journal of the American Medical Associa-*

tion and offered the reader, as a change of pace from clinical papers, a "feature story" approach in describing how individuals and organizations join with physicians to tackle important health matters. Milton Golin, who was previously responsible for *Medicine at Work* in the JAMA is editor for PMA. Through this new periodical we hope to enhance public understanding in such areas as environmental health problems in city and rural life; alcoholism; individual benefits of rapport between medicine and religion; traffic accidents as a medical problem; new kinds of clinics, hospitals, poison control centers and home care programs; health progress in space travel studies; socio-economic trends relating to the well-being of aged persons; citizenship activities among individuals in the health field; the essence of medical research as it leads to important discoveries, and many others.

In addition to these regular publications, PMA has ventured into the pamphlet field, so far, on two occasions. The first was "Cost of Drugs," a series of questions and answers about the industry and its products which has been distributed widely to combat erroneous statements on this subject which have appeared in the press in recent months. The second is "The Better Life," a chart and text story about the drug industry which was used most effectively by Dr. Smith in his testimony last spring before the Senate Subcommittee on Antitrust and Monopoly. An effective series of one page advertisements, prepared by the Pharmaceutical Advertising Club of New York, is appearing on behalf of PMA in leading medical and pharmacy journals throughout the country through the courtesy of the publishers. They have evoked wide interest, as evidenced by letters received from physicians and others, largely because of the straightforward statements printed under such provocative titles as "Failure Is Our Most Important Product," "The Drug that Always Fails Is the Drug that Isn't There" and "You Can't Go Places in a Strait Jacket."

New projects under way at PMA headquarters include additional timely pamphlets, a speakers' bureau of top representatives of industry for appearances before lay audiences, a series of surveys and questionnaires on costs of illness and the prescribing habits of physicians, development of information services for professional groups, and wide support of increased effectiveness of medical communication among practitioners.

Notable among the achievements of PMA is a major public service program of the association to conduct a full-scale probe of the impact of medicine costs on the American public. Using the full resources of PMA, this broad study is designed to bring together in one place information which has never been gathered in this country by any source, public or private. Actually, the first part of a nine-point program, announced recently, this project will determine

1. The extent of use of prescription drugs by the general population.
2. The segments of the population using drugs and under what circumstances.
3. The ways in which drugs are being provided in medical care programs.
4. Whether needed drugs are available to patients.
5. Which elements, if any, of the population may be deprived of necessary drug therapy and the reasons for such deprivation if it exists; and
6. The true relationship of prescription drugs to medical care needs and costs.

In summary . . . this new scientific and professional organization of the prescription drug industry in the year and a half of its existence has embarked on a major program of information, communication and service not only for the members of the health team—physicians, dentists, pharmacists, nurses and technicians—but also for the public. These efforts will be continued and intensified in the years to come in behalf of the men and women of an industry which is dedicated to prolonging life, alleviating pain and eradicating disease.

# Zonulysin and Instrumentation in Mass Eye Surgery

By

ROLAND I. PRITIKIN, M.D.\*

DURING the 1960 operating season at Shikarpur, Pakistan, three ophthalmologists, Drs. R. W. B. Holland, Roland I. Pritikin, and Kenneth Somers were engaged in the project of testing zonulysin. *Chymotrypure Novo*, a crystalline alpha-chymotrypsin dialized and lyophilized for enzymatic zonulysis was used. This is manufactured by the Novo A/S, Copenhagen, Denmark. The dry powder (2 mg.) comes in a sterile vial accompanied by a 10 cc vial of sterile Ringers solution. This when mixed is sufficient for 40 patients.

The solution was used in cataract operations. The technique of cataract operation was altered only so far as pertains to the use of zonulysin. After section 0.25 cc of the zonulysin solution was instilled directly under the iris at the six o'clock point. A blunt needle was used. There was a two-minute waiting period during which an iridectomy was performed. Our experience was that the zonulysin made cataract extraction much easier.

Whereas in an ordinary forceps extraction we exerted 10% pull and 90% push with the lens hook, the process was reversed when we used zonulysin. In many instances we simply lifted the lens out of the eye with the forceps. We had no increase in compli-

The opinions expressed in this paper are those of the author and do not necessarily reflect those of the Department of Defense or the Department of the Army.

This investigative work was done in the Henry Holland Eye Hospital, Shikarpur, Pakistan. Three ophthalmologists were associated in the work: Roland I. Pritikin, Colonel MC, USAR, Research and Development Project, Office of the Surgeon General of the Army; Kenneth Somers, Colonel MC, USA, Ass't. Chief, Eye Clinic, Walter Reed General Hospital, Washington, D.C.; and R. W. B. Holland, FRCS, Director, Henry Holland Eye Hospital, Shikarpur.

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cations and no increase of striate keratitis from using the zonulysin.

We did not use the solution in patients under 20 years of age. In a juvenile cataract, the zonular fibers and the posterior attachments of the lens are too firmly bound to the vitreous, almost as in the rabbit's eye. Lifting the lens with its posterior capsule intact and connected to an unruptured anterior capsule will bring the vitreous out almost exactly in the same manner as it does in the case of the rabbit's eye.

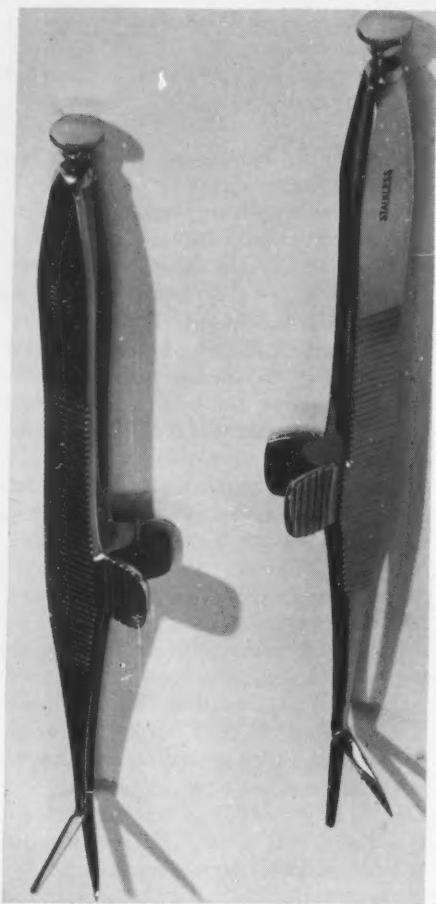
We found that by using 0.25 cc of the zonulysin solution that it was not necessary to wash it out of the anterior chamber as is done when 2-5 cc are used. We had none of the difficulties experienced by some operators who were using larger amounts of alpha-chymotrypsin. Furthermore, we had no problem with sutures since we used none.

## INSTRUMENTS

There were several instruments that we found useful in mass eye surgery.

The DeWecker-Pritikin Iris Scissors (right and left) (Fig. 1). The usual DeWecker iris scissors is so angled that it is more convenient to hold it against the iris with the blades cutting across the top of the iris. If the operator wishes to turn the blades so that they will face him as he stands at the head of the table, he will have to turn his wrist at an angle of 90° and this may prove hampering. He will have to turn his wrist at an angle of 90° so that the blade tips will face him if he wishes to have a keyhole type of iris pupil instead of a boat-shaped pupil. This new type of iris scissors, angled at 90°, will enable him to hold his hand in the usual position because the tips of the blades will be facing the operator.

A similar problem presented itself with the scleral punch in cataract combined with glaucoma operations. A new punch (Fig. 2) has an angle of 90° and is, therefore, more



Herzog

FIG. 1. The DeWecker-Pritikin Iris Scissors (right & left). Manufactured by V. Mueller & Co. Chicago, Illinois.

easily and accurately manipulated.

Multiple retinal detachment electrodes have been useful in mass eye surgery. They are used in perforating diathermy, electrolysis, and surface coagulation.

Perforating diathermy is accomplished by the use of 75-125 milliamperes of current. Multiple punctures are made in the sclera either with a multiple needle point electrode or with a single electrode. Subretinal fluid is withdrawn with suction, after scleral trephining.

Electrolysis makes use of the galvanic current, employing one or two milliamperes of current. With the ophthalmoscope, gaseous bubbles can be seen in the vitreous. The needle is withdrawn and reinserted as often as necessary.

Surface coagulation is applied to the sclera by various types of electrodes or thermophores. The subretinal fluid is then drained by means of a trephine opening. Although a multiple type needle has been used in the past, it has given way to the single needle. It was observed that the single shorter needle, 0.5 mm in length, is just as effective, and probably does not burn too deeply as one of greater length. This is a popular needle with many eye surgeons.

There are situations, however, in which speed may be a factor in retinal detachment



Herzog

FIG. 2. The Pritikin Scleral Punch. Manufactured by V. Mueller & Co. Chicago, Illinois.



FIG. 3. Pritikin Multiple Retinal Detachment Needles. Manufactured by V. Mueller & Co., Chicago, Illinois.

surgery, especially if considerable surgery has to be done, or in a situation where mass eye surgery becomes necessary. Needles (Fig. 3) have been made up in two types: 1.75 mm long, and 0.5 mm long. These needles may be used in such situations as: after intraocular foreign bodies are removed through a scleral incision and the scleral incision is sutured; each side of the scleral incision can be diathermized. More complete diathermization and speed may be used in sealing off a small hole after it has been localized with the ophthalmoscope following

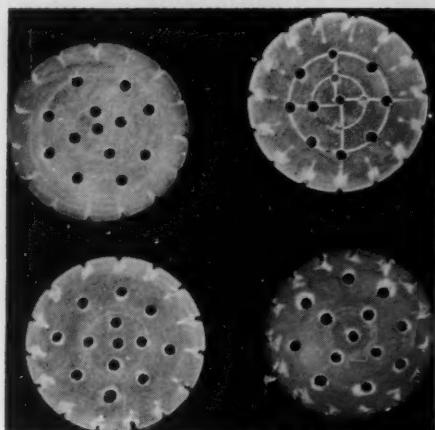


FIG. 4. Pritikin Corneal Splint. Manufactured by V. Mueller & Co., Chicago, Illinois.  
*Rockford Memorial Hospital*

diathermization with a single electrode. Pritikin Corneal Splints (Fig. 4) may be used to hold lamellar corneal transplants in place, speed keratoplastic surgery, facilitate healing, and release the patient from the hospital much sooner.

#### CONCLUSION

Zonulysin has a place in mass eye surgery. Instruments that facilitate eye surgery should be utilized.



## Music and "White Sound"

By

ROBERT SCHERMER, D.D.S.

THE first few minutes a patient is in the dental chair determines his attitude toward the entire dental visit. A good mental attitude promotes a more comfortable and relaxed dental patient. In our experiences, music and white sound have been a great help.

Music has been used as an instrument of healing for as long as history has been recorded. The medicine man in equatorial Africa used music in his therapy. Niam-Niam women delivering on a crude birth stool on the bank of a river always had a musical accompaniment.

An attempt is made here to evaluate the effects of music, "white sound," and "white noise" individually and in combination on over four thousand clinical cases in the past fourteen years.

"White noise" is an electronically produced "noise" that is produced by an electronic tube or diode. It simulates a roaring noise of a waterfall.

"White sound" is an actual recording of a natural sound such as a waterfall or falling rain. This sound is usually recorded on tape and is more realistic as it is the actual roar caused by water falling.

The use of stereophonic music used today in combination with "white sound" produces the greatest percentage of effectiveness of auditory "distraction analgesia" on patient and "jams" their auditory impulses. Successful cases by this method reach 90% when certain patients are removed from this category, who have no appreciation for any kind of music and patients who have an occupation where earphones or similar equipment are used in their work, such as telephone operators.

In 1946 when commercial monaural music was piped into the headphones or a push button radio, music was used alone; successful relaxation or distraction analgesia was noted in only 40% of the cases. With the addition of a random noise, this was in-

creased to over 50% of the cases. In later years, by the use of Stereophonic music, which is more interesting listening, the effectiveness increased to 62% of the cases. With the addition of "white sound," this figure rose to 76% including all types of patients, those that were hard of hearing or deaf, those that lacked music appreciation, workers who could not stand wearing earphones, and those patients who wished to have a more personal relationship with their dentist by conversing with him. It is also noted the louder the tolerance of either music or white sound, it seems the greater the percentage of effectiveness.

Dr. Earl D. Schubert, former Director of Research for the Cleveland Hearing and Speech Center of Western Reserve University and now at the University of Indiana says, "It seems prudent to limit the maximum output of the transducer to a level which would virtually insure protection against auditory damage. For those broad, smooth spectra, and considering the range of the phones, a maximum of 105 decibels sound pressure level has been recommended."

Robert A. Hingson, M.D., professor of Anesthesia at Western Reserve University School of Medicine in a preliminary report indicates "the value of music therapy and white sound in a pediatric cardiac catheterization of several hours duration on two occasions this week by contrast with the extreme restlessness the preceding day. It proved to be of great value."

In conclusion, we might say that the "auditory distraction analgesia" unit we use should be safe to hearing even at maximum output under prolonged exposure and should have tapes of relaxing music with white sound for the greatest effective "auditory distraction analgesia."

510-511 Euclid Arcade  
Cleveland 15, Ohio

# The Microbicidal Property of a New Iodophor Antiseptic Solution

By

JOSEPH M. MILLER, M.D.,\* DEBORAH A. JACKSON, B.S.,\*\* CHARLES S. COLLIER,<sup>†</sup>  
AND HAROLD R. JOHNSON, M.D.<sup>††</sup>

**A** NEW iodophor antiseptic solution studied consists of a five per cent concentration of complex compound of iodine and two non-ionic surface active agents dissolved in water. The preparation has an available free iodine content of one per cent.

The preparation has been reported to offer a number of distinct advantages over solutions containing a comparable concentration of free iodine.<sup>1</sup> This combination of substances has a low acute oral toxicity in mice. Local irritation of Ioprep as assessed by instillation of the liquid into the eyes of rabbits was moderate and transient. The preparation did not interfere significantly with the healing of wounds while a tincture or solution of free iodine of comparable concentration showed impairment of healing. The microbicidal activity against a spectrum of test organisms was pronounced and identical to that of unbound iodine. Ioprep will produce a temporary stain of tissues and fabrics but due to the presence of surface active agents this can be removed by simple washing procedures, which is not possible in the case of solutions or tinctures of unbound iodine.

These factors suggested that Ioprep might be a good preparation to use as a mi-

crobicidal agent in surgical work in general. One of the important considerations in the use of this substance for preparation of the skin for operation is the time necessary for such an agent to kill the microorganisms. This time should be within 1 to 3 minutes. Longer periods of time are not practical.

The microbicidal activity of Ioprep was tested, therefore, against a spectrum of microorganisms present on the skin either normally or in infections. The organisms used were *Staphylococcus aureus*, *Streptococcus pyogenes*, *Escherichia coli*, *Proteus vulgaris*, *pseudomonas aeruginosa*, *areobacter aerogenes*, and *Candida albicans*. The bacteria were in broth cultures which were 24 hours old and the fungus was in a Sabouraud liquid medium of the same age. Dilutions of the Ioprep were made with either broth for the bacteria or the Sabouraud liquid medium for the fungus. One-half ml. of the culture of the organism under test was added to 10 ml. of the various dilutions of Ioprep. At 1 minute and 5 minutes, Transfers were made from these mixtures to test tubes containing 10 ml. of the corresponding medium. All of the test tubes were incubated at 37°C. for 24 hours. If growth was not apparent, subcultures to blood agar plates for the bacteria or to plain agar plates for the fungus were made and these were incubated in a similar manner. The results are shown in table 1.

As the pH of Ioprep as 2.87 it was thought that this factor might play a role in the microbicidal activity of the preparation. Study of the microorganisms utilized showed, however, that their viability was not impaired after exposure to buffered veronal solutions of pH 3, 4 and 5 for 1 and 5 minutes.

Standard *in vivo* tests were done by contrasting the use of Phisohex and Ioprep. In

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TABLE I  
VIABILITY OF MICROORGANISMS EXPOSED TO DIFFERENT CONCENTRATIONS OF IOPREP FOR VARIED PERIODS OF TIME

Microorganism Studied	Concentration Of Ioprep In Per Cent	Time Of Exposure		
		1 minute	5 minutes	24 hours
Staphylococcus aureus	100	—	—	—
	50	+	—	—
	10	+	+	+
	1	+	+	+
Streptococcus pyogenes	100	—	—	—
	50	—	—	—
	10	+	+	+
	1	+	+	+
Escherichia coli	100	—	—	—
	50	—	—	—
	10	+	+	+
	1	+	+	+
Proteus vulgaris	100	—	—	—
	50	—	—	—
	10	+	+	+
	1	+	+	+
Pseudomonas aeruginosa	100	—	—	—
	50	—	—	—
	10	+	+	+
	1	+	+	+
Aerobacter aerogenes	100	—	—	—
	50	+	+	—
	10	+	+	+
	1	+	+	+
Candida albicans	100	—	—	—
	50	—	—	—
	10	+	+	+
	1	+	+	+

+=Growth Present

-=Growth Not Present

a series of 50 patients, cultures were taken from the skin of each side of the abdomen and placed in broth. The sites were scrubbed for 3 minutes respectively with either Phisohex or Ioprep and cultures were again taken. These were incubated at room temperature for 24 hours. Subcultures were then made to blood agar plates which were incubated at 37°C. for 24 hours. Before the scrubbing with Phisohex, forty-two of the fifty cultures were positive while

after, four of the fifty were positive. Before the Ioprep was used, forty-six of the fifty cultures were positive while after, none of the fifty were positive.

Since Ioprep in full strength killed all of the organisms against which it was tested in one minute the method and time of preparation of the skin were changed. Cultures were made from the skin of the abdomen in a series of fifty patients and placed in broth. The sites were painted without scrubbing.

Cultures were taken after one minute and treated in the same way. Before painting with the Ioprep, forty-four of the fifty cultures were positive while after, eight of the fifty were positive.

The mechanical scrubbing of the skin was known to be valuable in its preparation for operations. The effect of cleansing the skin with Ioprep for 1 minute was studied in a series of fifty patients, with cultures being taken and treated in a similar manner. Before scrubbing with the Ioprep, fifty of the fifty cultures were positive while after, none of the fifty was positive.

Iodine in varying concentration has been used as a preparation of the skin for operation, but has gradually fallen into disuse because of the general feeling that it produced inflammation and sometimes burns of the skin. Irritation of the skin was not seen, however in the 150 patients on whose skin Ioprep was applied in this investigation.

#### COMMENT

Ioprep would seem to be an excellent solution for preparation of the skin for operation. Free iodine is a fine antiseptic and exerts its effect over a wide range of pH. The unique complex of iodine with the non-ionic surface acting agents in Ioprep releases sufficient free iodine to produce a microbicidal effect but not enough to produce inflammation of the skin.

Ioprep, with its one per cent free iodine in an aqueous solution, has pronounced microbicidal activity *in vitro* against a full spectrum of pathogenic organisms. Exposure of these organisms to the compound in full strength will kill them in one minute.

*In vivo*, it is known that the skin harbors resident microorganisms and transient mi-

croorganisms. The transient flora, which usually cause infections, can be removed by mechanical and chemical cleansing. The resident flora are difficult to remove but unless present in large numbers, they do not cause clinical problems. The detergents will help in both facets of the cleansing problem. They promote the mechanics of scrubbing and the spread and penetration of the chemical. The combination of scrub and chemical attack will effectively prepare the skin for operation.

- The scrub with Ioprep for three minutes was very effective in preparing the skin. When the skin was only painted with Ioprep and the cultures taken after one minute, the results were not satisfactory. By the addition of scrubbing for one minute, the results again were excellent. For additional safety in clinical use, a scrub of the skin for three minutes with Ioprep would seem to be an excellent preparation of the skin for operation.

#### SUMMARY

Ioprep is a complex compound of iodine and two non-ionic surface active agents in water providing an available free iodine content of one per cent. A pronounced microbicidal activity was demonstrated against a full spectrum of pathogenic microorganisms. Ioprep should provide a good preparation of the skin for operation.

#### ACKNOWLEDGMENT

The Ioprep was supplied by Johnson and Johnson, New Brunswick, New Jersey.

#### REFERENCE

- 1 Johnson and Johnson. Ioprep. New Brunswick, New Jersey.

# Gunshot Wounds From .30 Caliber Blank Cartridges

By

CAPTAIN RICHARD P. TORP, MC, U. S. Army\*

(With two illustrations)

**T**HE .30 Caliber Blank Rifle Cartridge (Cartridge, Blank, Cal. .30, M1909), often casually assumed to be a harmless training aid, is frequently the cause of serious injury among military personnel, particularly infantrymen. These wounds are caused not only by the accidental discharge of weapons but also by intentional firing at close range during simulated combat training.

There were 11 admissions (one readmission) to the United States Army Hospital, Fort Campbell, Kentucky, between 7 October 1958 and 7 November 1960 due to blank rifle cartridge wounds. The longest period of hospitalization was 112 days, the shortest 4 days, with an average of 34 days hospitalization required for each case, including 3 patients still hospitalized on November 7. The one readmission was transferred to another medical facility after 2 days hospitalization, and is not counted. Only 2 patients of this series were discharged to full military duty. Temporary restriction of duty was imposed on all others following hospital discharge.

The following cases indicate the potential seriousness of blank rifle cartridge wounds and illustrate some of the problems that can be encountered.

## CASE REPORTS

**CASE 1.** An 18 year old soldier was admitted to the hospital on 24 October 1958 for treatment of a gunshot wound of the buttocks when he was accidentally shot with a blank cartridge by a companion during a field problem.

There was a 2 cm. wound of entry on the medial aspect of the left buttock. The missile tract extended inferiorly and anteriorly into

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the anococcygeal body with evidence of shattering the posterior wall of the entire anus and distal one or two centimeters of the rectum. There was interruption of the internal and external anal sphincters. Most of the soft tissue in the anococcygeal body was destroyed exposing the ischiorectal fossae and levator ani muscles bilaterally. Destruction of 2 large nerves was noted which were presumed to be the left pudendal and inferior hemorrhoidal nerves.

Under spinal anesthesia the wound was debrided, the sphincters and anorectal mucosa were reapproximated. The anal mucosa could not be reapproximated to the skin posteriorly because of severe damage to the anococcygeal body. The wound was left open to the skin. On the day following surgery a large hematoma was evacuated from the wound and a venous bleeder was clamped and tied. A transfusion of 500 ml of whole blood was given. A sigmoid colostomy was performed on the second postoperative day which subsequently functioned well. The patient's condition improved, the wound healed slowly, and slight anal sphincter action appeared. He was given a convalescent leave on 15 December and returned to the hospital 10 January 1959.

His colostomy was closed under general anesthesia on 6 February 1959. Postoperatively the patient did well except for having a bowel movement every 2 to 4 hours. By 26 February he was having only 2 stools daily and had good sphincter control except for the inability to control the passage of flatus. He was returned to limited duty on 11 March 1959, more than 6 months after his initial injury.

**CASE 2.** A 19 year old soldier accidentally shot himself in the right foot with a .30 caliber blank during field training on 15 September 1960. He was immediately eva-

uated to the hospital. Physical examination was within normal limits except for a large, irregular and dirty wound of entrance on the dorsum of the proximal phalanx of the fourth toe leaving the extensor tendons exposed and partially frayed but functional. A fractured bone was exposed and a wound of exit was present on the plantar aspect of the proximal phalanx of the fourth toe.

After debridement under general anesthesia it was obvious that amputation was necessary so the toe was disarticulated at the metatarsophalangeal joint. Further debridement was carried out, the wound was irrigated, and closed primarily.

On 24 September 1960 beginning necrosis at the suture line was apparent which progressed to suppuration. The wound infection was treated with tryptar ointment until it was no longer purulent and demarcation was complete approximately one inch proximal to the web space. Saline soaks and bacitracin ointment were then applied and a clean granulating bed was present by



FIG. 1 (Case 2). Destruction of fourth toe by blank cartridge wound resulted in surgical amputation, wound infection, and finally healing.



FIG. 2 (Case 4). Blank cartridge wound of axilla 11 days after debridement and open treatment.

12 October. This closed satisfactorily (Fig. 1) and on 14 November 1960 the patient was transferred to the convalescent ward pending desquamation of the eschar.

CASE 3. A 26 year old specialist fourth class accidentally shot himself in the left hand with a blank rifle cartridge while on a field problem 25 April 1960. He was taken to his unit dispensary where the wound was debrided, and then admitted to the hospital. There was a gaping, stellate wound of the interdigital web between the thumb and index finger of his left hand.

The patient was initially treated with continuous saline soaks. On 6 May debridement and secondary closure was accomplished with brachial block anesthesia. The postoperative course was uneventful and on the tenth postoperative day the wound was clean and the sutures were removed. At that time the patient was started on physical therapy to gradually increase the range of motion of his fingers. By 28 May 1960 the patient had recovered nearly complete function of his hand and was discharged to limited duty.

CASE 4. A 24 year old soldier shot himself in the left axilla on 3 November 1960 with a blank cartridge as he was leaning over

muzzle of his rifle and accidentally discharged the weapon. He was taken directly to the hospital where examination revealed a 4 x 5 cm defect in the skin near the anterior axillary line exposing the biceps and pectoralis major tendons. There was an area of hypesthesia over the volar surface of the forearm, but no other signs of major artery or nerve involvement.

The wound was debrided under general anesthesia and was found to be grossly contaminated. The biceps had been split down to the humerus and the median nerve was exposed. Postoperative paresthesias in the distribution of the median nerve were noted in the hand, which gradually disappeared. The wound did not become infected (Fig. 2), but there was a persistent edema of the arm and forearm. Secondary closure was performed on 18 November. By 22 November the edema had begun to subside and the wound was healing well.

The other cases include 1 wound of the popliteal area with laceration of the common peroneal nerve, 1 traumatic amputation of the fourth toe, 3 wounds of the arm, and 1 wound of the fifth finger.

#### DISCUSSION

Blank rifle cartridges are charged with 12 grains of E. C. powder, a single base, nitro-cellulose, gunpowder of the type used in shotgun shells, and, formerly, in hand grenades.<sup>1</sup> In manufacture, a paper cup or wad of thin paper is inserted in the neck of the cartridge case against the cannelure and sealed in place with lacquer.<sup>2</sup> The wad or paper cup may fail to break up and so act as a missile up to a range of 20 yards. This is the basis for a regulation forbidding the firing of blank cartridges at personnel at distances less than 20 yards. The greatest

source of injury, however, is the muzzle blast itself consisting of hot gases at high velocity propelling unburned powder granules, bits of wadding, and usually clothing. Although no ballistic data regarding this cartridge is available, Case 2 demonstrates that the muzzle energy is great enough to cause perforation of the dorsal surface of a leather boot, a wool sock, and a human toe. In retrospect, Case 2 should have been left open and closed secondarily, although at the time of initial wound surgery it appeared that the wound had been completely excised.

An incidence of approximately 6 cases per year for blank rifle cartridge injuries on a large, predominantly infantry, Army post, as indicated by the hospital admission data, does not reflect the true frequency of this type of wound. Many, less severe, cases are treated at dispensaries and go unrecorded.

#### SUMMARY

Blank rifle cartridge wounds are not rare. The discharge at close range of rifles loaded with blank cartridges is capable of inflicting severe wounds which may result in prolonged hospitalization and subsequent incapacity for full duty. These wounds may be deeply penetrating or perforating and, in such cases, should be managed like other small arms missile wounds: left open and closed secondarily. Failure to regard the rifle loaded with blanks as a dangerous weapon is probably the cause of most, if not all, of these injuries.

#### REFERENCES

- <sup>1</sup> Department of the Army TM 9-1910, *Military Explosives*, para. 81., p. 249, April, 1955.
- <sup>2</sup> War Department TM 9-1990, *Small-Arms Ammunition*, para. 77., p. 98, September, 1947.

## In the Pig's Eye

By

HERMAN ZAIMAN\* AND JOSEPH HIRSH†

WHILE it has often been said that the proper study of man is man himself, much that is directly applicable to *Homo sapiens* can be learned from the pig, from his manner of living, the catholicity of his tastes and the voraciousness of his appetite which might well serve as a model and warning for man. Moreover, in the pig's carcass which he consumes and his bristles which he employs in a variety of ways man finds in this beast a contradiction of delicacy and disease unmatched in virtually any other mammal.

Throughout history the pig has had a host of the most violent pro- and antagonists. He has been anathema to ancient Jew and Egyptian alike who regarded him as unclean. Swineherds in ancient Egypt were not permitted to enter temples or to marry. Ancient Syrian worshipers of Attis ate no pork. The modern Moslem like those forebears has no greater love for the pig. And yet, for almost every group which regarded the pig as unclean, there can be found one which regarded him almost reverentially. Cretans actually worshiped pigs. In India the pig is a sacrificial animal used to placate demons of disease and the goddess, Cholera. Among a number of primitive beliefs drinking pig's blood is believed to induce prophetic power.

The pig is a sign, a symbol and a portent for many people. In Ireland, in another time known as Pig Island, the black pig was a bad sign. Closer to our shores, many Carib Indian girls believed that small pig eyes would develop after eating of pork.

Among the more pervasive notions of the potency of the pig is one held by New England farmers. When threatened with copperheads or other poisonous snakes they turn

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pigs loose into the fields. The porker, arch enemy of the snake, is believed to clear out the fields. The fact of the matter is that where pigs roam freely, snakes are not found.

In our own time how many of the younger generation fully appreciate the fact that the number of teats on a hog limits the number of offspring she can suckle. But true it is—for each piglet in the litter sets his teeth to a particular teat with a tenacity shared only by man. In retrospect then it seems best that our national concern for the individual sucking hind teat be transferred to him that has no teat at all. The prognosis is surely worse for the latter of the litter.

But enough of momism! For pop and those preoccupied with maleness it is of interest to note that a STAG is a male (pig, of course) castrated late in life. Males retaining their testes become boars when full-grown suggesting that the nomenclature was coined by someone's maiden aunt.

Sexually the pig is precocious. According to one authority "gilts or yefts as young females are called are ordinarily put to the boar for the first time at the age of eight months." The farmer acts as intermediary without protest from the clergy or civil authorities perhaps because he shares the flesh he procures. There can however be little doubt that he gets money for it. (Similar activities among human urban populations are frowned upon, which may account for the recent trend toward suburban living.)

Pregnancy inevitably turns the female pig into a sow. The same conversion may be noted among some of her human counterparts. The former, however, is more fertile, producing from one to twenty piglets per litter after a four-month pregnancy. It seems unlikely that automation will decrease the pig to man gap—even in Russia.

Irritated sows are likely to kill and eat their young, especially if the teeth of the

latter are sharp. This is relatively rare among humans probably because the young are untoothed. Killing husbands however is much more common among *Homos*.

There are many types of pigs, some white, some black and some are even red. Pure strains are kept intact by segregation. Some of the finest pigs come from the South. In the North desegregation occurs without noteworthy incident suggesting that segregation is man-made rather than divine in origin. Similar data are unavailable from the South.

The responsibility for raising piglets is divided between the sow and the farmer, the former providing milk, the farmer shelter and slop. The slop is thin at first but thickens as the piglets grow older. (One thickens slop by adding vegetables, grain, garbage or ground limestone to its basic ingredient, water.) As the piglets grow older they forage afar for food.

Shelter for the piglets may be provided in a variety of ways. In much of Europe, Africa and Asia they have intimate household status. This democratic way of life has nearly disappeared from the United States. It could easily be reestablished if a sincere effort were made to redistribute our population by leveling the monstrous cities we now inhabit. Recent events in this hemisphere and abroad suggest that this is a distinct though not to be hoped-for possibility. It is comforting to note, however, that since pig and human populations of the country are nearly equal, everyone will be able to participate in the proposed panacea.

Successful integration of man and pigs can succeed only if mutual understanding, respect and protection is assured. Pledges to refrain from eating each others feces are a *sine qua non* in establishing the new order for deep in the gut of him, each harbors the other's destruction. Thus pigs filching man's feces from privies or wherever he or chance may deposit them, may ingest tapeworm eggs which hatch, bore through his intestine and pepper his muscles with numerous balloon-like cysts. Conversely, man, emulating the pig by eating his feces containing *Balantidium coli* will wish he hadn't. This *Balan-*

*tidium*, a giant among germs, is a hairy, big-mouthed character who bores holes in man's gut producing an ulcerating inflammation of the bowel characterized by a bloody dysenteric flux often terminating in death. It is obvious that man's slogan must be *Pigs Yes, Feces No*. Conversely patriotic pigs will proclaim *Yankees Si, Feces Non*.

Pledges to forego fecal feasting however are not enough if man and pig are to achieve optimum health. Further sacrifices will be demanded from each group. Thus the pig must forego his love of raw rat, a morsel most pleasant for procine palates. The pace pure raw rat runs is too rapid for porkers. It follows that rats available to pigs are wretched, weak, wasted, aged or ailing. Among the latter are those whose muscles harbor *Trichinella spiralis*, the worm that turns. This unique worm causes trichinosis in bear, man, rats, pigs, among others. Like most uniques it remains sexually immature under the restraining influence of muscle. Let this restraining influence be digested away in the stomach of the pig, these juveniles make a beatnik brawl tame by comparison. For having gorged these little worms the pig serves as a site for orgies incomprehensible to man. Within two weeks each female is blest with upwards of 1500 offspring destined to wander through the pit till restrained by the conventional voluntary muscle. No one knows how many clandestine rendezvous are involved but the fact that there is a 2:1 sex ratio of females to males suggests that the male is the stronger sex sexually. This is as it should be in this best of all possible intestinal worlds.

When man eats pork containing live *Trichinella* the same processes prevail. In a vain effort to divest himself of the orgiastic intestinal organisms, he produces a fecal parade of fabulous proportions. But all is in vain. Life begets life and the wandering offspring bore their way through man to his muscles. Muscle pain proportional to the progeny produced is prominent among the symptoms. Offspring migrating through or dying in inappropriate places produce problems peculiar to the locus in which they are

lost. Finally the patient dies. The outlook for the worms is not too good either. Properly refrigerated they could survive for weeks until their fleshly home is eaten. But alas, no one eats human meat any more and so the poor worm gets no other turn. As a consequence, wise worms avoid people by cleverly arranging themselves in pork that will be discarded and fed to other hogs or rats as garbage. By this mechanism, one pig's meat becomes another's poison. For the pig then, the danger of acquiring trichinosis is neatly categorized as bi-fed; self-imposed while eating infected rat, but cannibalistic when man feeds pig-to-pig.

All efforts to educate pigs or man concerning the danger of trichinosis and the necessity for thoroughly freezing, cooking, or otherwise treating pork and rats have failed, to judge from the fact that over 20 percent of the U. S. population are estimated to be trichinotic. The recent discovery of another garbage transmitted disease limited to hogs which prevents marketing affected animals may prove a blessing in dis-

guise. Stimulated by draining pocketbooks the farmer, friend of the American pig, prodded practically every state legislature to pass laws to prevent feeding raw garbage to pigs. This gesture of friendship is thrice blessed. It blesses the pigs that would have acquired the new disease, the pigs that would have acquired trichinosis and the people who might eat the pig that had the worms. There is little likelihood that a law requiring the thorough cooking of pork for human consumption or rats for porcine platters will pass since no economic laws or losses are involved. Application of such laws would of course also kill the balloon cysts of the pig tapeworm present in hog muscles thus preventing its transmission to man.

It is fascinating to think of the problems of enforcement. Should a pig inspector be placed in each kitchen the sanctity of the American house and family life as we know it might seriously be endangered. Conversely, however, such trespassers in the kitchen themselves might well be violated to the fullest extent.



## Remedial Medicine in the American Revolutionary Army

By

HOWARD LEWIS APPLEGATE

### III

ALTHOUGH many surgeons were interested in preventive medicine, much of their time was consumed in diagnoses and treatment of the various diseases that plagued the army. Diagnosis in the Eighteenth century was not a simple matter as each of the general categories of ailments had several variations with some general symptoms and some particular reactions. For example, the army was bothered by several kinds of fevers: bilious, typhoid, remittent, jaundice, phrenzy, and putrid. Generally speaking, fevers were caused by fatigue, overexposure to the elements, excessive drinking of alcoholic beverages, low morale, poor ventilation, and lack of proper sanitary facilities. Surgeons felt that jaundice resulted from indiscriminate eating habits. Phrenzy was attributed to overexposure or excessive drunkenness.<sup>1</sup>

Venereal disease was a constant menace. All "bad women" were ordered out of camps as they delayed marches, caused a weakening of army discipline, stole provisions, and most important, infected the soldiers with venereal diseases. Only women married to soldiers and female nurses were technically allowed to remain with the army. Surgeons could do very little to ease the pain of the afflicted man, because of their complete ignorance of the malady. Infected patients were given a special diet of broth, barley, rice, oats, greens, fresh meat, milk, and ripe fruit. Special ointments were applied to the diseased area. As severe punishments were inflicted on the men who reported social diseases, many men chose to suffer in silence.<sup>2</sup>

Dysentery and "camp disorders" thought to be severe varieties of diarrhea, were assumed to be caused by wet clothes, variable climatic conditions, stagnant water, or

tainted meat or moldy bread. The first symptoms of camp disorders were chills alternating with fevers followed by pains in the head, back and limbs. Simultaneously there was a loss of appetite which was accompanied by nausea and diarrhea. Surgeons were so baffled by these cases that they could do very little for the patients. Often the doctors merely let nature take its course; some men regained their health, but unfortunately, many others died.<sup>3</sup>

Smallpox was an ever present enemy of the army.<sup>4</sup> Inoculation, although prohibited at first was clandestinely practiced by some surgeons and soldiers.<sup>5</sup> There were five major smallpox scares during the war. Smallpox nearly ruined the Northern army during 1776. Fear of the disease, which was stronger than fear of the enemy, resulted in declining enlistments, increasing cowardice and desertion, and a depression of morale.<sup>6</sup> During the siege of Boston in 1776, the Americans suspected the British of trying to infect them with pox, when the latter sent several afflicted men into the American lines in the hopes they would be kept as prisoners. However, the Englishmen were quickly escorted back to their own lines. When Boston was reoccupied strict measures were taken to prevent the spread of smallpox.<sup>7</sup> The alarming death toll due to pox caused General Washington to adopt inoculation as a preventive measure. Twice the main body of the army was inoculated *en masse*, at Morristown in 1777 and Valley Forge in 1778. Both times the Americans faced a double threat, an uncontrollable epidemic of smallpox and enemy attack with their army in a weakened state. Again at Yorktown in 1781, the British were accused of trying to spread infection among American soldiers.<sup>8</sup>

Washington sought a simple yet effective

method of inoculation. He learned the importance of administering several preparatory purgatives, of keeping the patient calm, and of providing a special diet, which consisted of wine, molasses, brown sugar, chocolate, tea, coffee, wheat bread, gruel, ripe fruit, vegetables, milk, and rice. A number of those inoculated in 1777 and 1778 died as a result of faulty preparation, lack of medicines, and ignorance of the disease. As the surgeons became experienced, the death rate dropped considerably. It has been estimated that mortality from smallpox inoculation averaged less than one percent while that from natural causes has been estimated at sixteen percent.<sup>9</sup>

A common ailment which occurred in all camps was homesickness, which was usually accompanied by loss of appetite, melancholy, restlessness, and low morale. This extremely contagious disease was common in regiments where living conditions were unsatisfactory. The best known cure was active engagement of the mind and body with exercise, drills, discipline, and furloughs.<sup>10</sup>

Sometimes men who were either cowardly or homesick feigned sickness so that they could either receive a furlough or gain admittance to the hospital. All men admitted to general hospitals had to have certificates of admission signed by the regimental surgeons. Several schemes were used to trick the surgeons into believing that these men were sick. Some suddenly developed lameness, fevers, cholera, scurvy, dropsy, or rheumatism. Several swallowed tobacco juice or ate green apples which gave them upset stomachs. Others covered their tongues with a chocolate coating, thus giving the appearance of a fever. If these charlatans were discovered in the hospitals, they were either court-martialed, fined, or whipped.<sup>11</sup>

Remedial medicine was dominated by tradition and superstition. Bleeding was the universal cure for many ailments. For example, in the first bleeding of pleurisy patients, twelve ounces of blood was removed and while the vein was open, the patient was forced to breathe deeply and cough. If

the pain did not diminish within twenty-four hours a second bleeding was prescribed. Rheumatic patients had ten ounces of blood taken from the afflicted areas. Men affected by phrenzy were bled in the foot and jugular vein, and if fevers remained, further bleeding was advised. The doctors' second "cure-all" was a mixture of salts, jalap, and balsam, the remedial powers of which were highly advertised, but the concoction was usually administered with little actual success.<sup>12</sup>

The soldiers had traditional remedies which were less scientific than those of the surgeons. One cure for venereal disease was an elixir of spring water, sumac roots, and gun powder. If this provided no immediate relief, a mixture of salts and spirits of turpentine was taken. A glass of horseradish roots mixed with mustard seed and gin was a cure for kidney ailments. A guaranteed remedy for snake bites was internal dosing of olive oil and external application of mercurial ointment.<sup>13</sup>

In fact, remedial medicine often increased sickness and suffering rather than acting as a diminishing factor. Doctors usually prescribed bleeding or physic, neither of which were of any benefit to the patient. Frequent bleedings weakened the sick man and made him more susceptible to other serious diseases. Purgatives and improper diet merely prolonged the agony.<sup>14</sup>

The surgeon had two guides: his medical education and experience, and the manuals of surgery edited by John Jones and John Ranby, which gave theoretical principles on the treatment of wounds and fractures.<sup>15</sup> On the battlefields these theories were often abandoned, as front line operations were hurried and unscientific affairs, usually because time was scarce, as were drugs, instruments, and skilled surgeons. The usual procedure was to have the wounded man lie on the ground or on a folding seat. The patient was sometimes given a drink of whiskey or rum or ordered to bite on a bullet during the operation, in the hopes his pain would be reduced. The wounded man was held down and with little other prepa-

ration, the surgeon began his work, probing for fragments of cannon balls, musket shot, or amputating shattered or diseased limbs. Immediate amputation was routine in most cases, although it was sometimes delayed several days in the hopes that medication might heal the wounds or reduce the infection. In the majority of such cases, amputation remained the gruesome eventuality.<sup>16</sup>

Broken bones were serious challenges to the army surgeon. When minor bones were broken, he did his best, using bandages and crude splints, and as a result many soldiers had crooked arms or legs. When most limb bones were broken or shattered, amputation was the easiest and most common practice.<sup>17</sup>

While it may be said that advances made in the area of preventive medicine by army surgeons represent the best of American military medicine during the Revolution, it may also be said that remedial medicine symbolized the utter incapacity of Eighteenth century military medicine. The ability to accurately diagnose naturally varied in relation to the competency of individual doctors. However, generally speaking American medical diagnosing should probably be rated fair at best. Army surgeons relied on manuals of medical practice which described remedial techniques, and yet they usually prescribed only three basic remedies: bleeding, purgatives, and waiting for nature to take its course. Many doctors were virtually helpless in surgery and bone-setting, although some became quite skillful as the war progressed. There is little evidence to show that remedial medicine effectively reduced the death rate—in fact the testimony leads one to believe the opposite conclusion, that improper and outdated remedies caused the deaths of many unfortunate soldiers.

(To be continued)

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## EDITORIALS

### Resolution on Elimination of the Position of Assistant Secretary of Defense (Health and Medical)

THE following resolution was passed by the Executive Council of the Association of Military Surgeons at its February meeting. Copies of this resolution have been sent to the President of the United States, the Secretary of Defense, and the Chairman of the Armed Services Committee of the Senate and House of Representatives: WHEREAS, the position of Assistant Secretary of Defense (Health and Medical) has been abolished and the matters pertaining to that office have been placed under The Assistant Secretary of Defense for Manpower, and

WHEREAS, medical care of the military forces personnel is a Department of Defense responsibility subject to accomplishment only when the key medical officer has direct access to The Secretary of Defense for fulfillment of a fully coordinated medical service program, and

WHEREAS, the military medical services have in the past decade contributed some of the world's outstanding medical achievements, and the people of the United States of America regard the health and welfare of their military personnel of prime importance, and

WHEREAS, the subordination of the chief professional representative in liaison between military medicine and The Secretary of Defense is not in the best interest of the people of the United States, its Armed Forces, or its military medical program.

BE IT RESOLVED that the Association of Military Surgeons of the United States

strongly recommends the re-establishment of the position of Assistant Secretary of Defense (Health and Medical) and that a copy of this resolution be presented to The President of the United States, the Congress, and The Secretary of Defense.

### A Letter To Dr. Berry

THE Executive Council of the Association directed that a letter be sent to Dr. Berry with a copy of the resolution.

The letter which follows was prepared by a committee and sent to him over the signature of the Secretary of our Association.

"Dear Doctor Berry:

"The Association of Military Surgeons of the United States is frankly disappointed in the recent action of the Secretary of Defense in abolishing the position of Assistant Secretary of Defense (Health and Medical) a position held by you.

"The position has required mature judgment and sound professional capabilities in the physician holding it. The Association believes that you and your qualifications have provided amply for the accomplishments and influence now prevalent at the Department of Defense level.

"We believe that the position should be re-established and to this end our Executive Council passed a resolution, and a copy of it is enclosed. The resolution was sent to the President of the United States, the Secretary of Defense, and the Chairmen of the Armed Services Committees of the United States Senate and House of Representatives.

"The Association's best wishes to you accompany this resolution as we continue to work for re-establishing the position which you so ably held."

## New Jersey Chapter Reactivated

AT A luncheon and ceremony at the Chalfonte-Haddon Hotel, Atlantic City, New Jersey, held on April 23, the New Jersey Chapter of the Association of Military Surgeons of the United States was formally reactivated by the presentation of a letter signed by the immediate past president of our Association, Rear Admiral Richard A. Kern, MC, USNR, Retired. The letter was dated October 31, 1960, the date of the Association's last Annual Meeting, when authorization was given for the reactivation of the chapter.

Colonel Robert C. Kimberly, Third Vice-President of our Association made the presentation. In his remarks Colonel Kimberly said, "One of the purposes of the Association of Military Surgeons is to assist in the prevention of some of the tragic errors that have occurred because we forget the lessons taught us in past wars. One example is that of cold injury, ground type, the prevention and treatment of which was clearly laid down in a field order of Marshal Haig, 5th British Army, in the Somme Campaign of 1917. Another is that of the primary closure of battle wounds. In the early part of World War II, I had to restrain some medical officers from doing primary closures on battle wounds. Like the citizen soldier, the citizen medical officer can maintain the medical pre-



(L to R) COL. ROBERT E. BITNER, USA, Ret., Secretary, Assoc., Military Surgeons; COL. RICHARD N. OUTWIN, NJANG, President, New Jersey Chapter; COL. ROBERT C. KIMBERLY, MdNG, Third Vice-President, Assoc. Military Surgeons; COL. LOUIS W. ABBAMONTE, NJARNG, President-Elect, New Jersey Chapter; LT. COL. JOSEPH M. TOBIN, NJARNG, Vice-President, New Jersey Chapter.

paredness between wars."

Colonel Albert G. Hulett who was Secretary-Treasurer of the former New Jersey Chapter was present and made a few remarks.

Officers installed at the meeting were: Colonel Richard N. Outwin, president; Colonel Louis W. Abbamonte, president-elect; Lt. Colonel Joseph M. Tobin, vice-president; Lt. Colonel John Dobronte, secretary; and Captain Howard D. Gutin, treasurer.

We wish for this chapter a very active future.



# The Association of Military Surgeons of the United States

*Founded 1891, Incorporated by Act of Congress 1903*

*Suite 718, New Medical Bldg., 1726 Eye Street, N.W., Washington 6, D.C.*

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## Around the World

(Ser. IV, No. 6)

By

CLAUDIUS F. MAYER, M.D.

**F**RANCE had had her troubles with the *pirates of Algeria* for several centuries until finally this part of North Africa was conquered by the French in 1830. Yet, the fight still continued, first with Abd-el-Kader, then with the Kabyls and other hostile tribes, until the French domination was extended also over the vast desert area in Southern Algeria. While the French penetrated into Algeria, the Algerian natives also commenced their own penetration into France. The élite of the Moslems were attracted to the faculties and schools of France, and recently the *Arab working men migrated* in larger and larger numbers to the metropolitan area of Paris. They came with the international expositions, with the ships as sailors, or as soldiers since 1914. During the First World War, many of the munition workers in France were also Algerian Arabs. These Moslem workers around Paris created various social, economic, and *health problems*, which were recently discussed at the French Academy of Medicine. The problem became very acute after September 1947 when the Algerian Moslems were given French citizenship. During the past ten years, more than 3 million tour-retour passages were recorded for the Algerian migration. In 1948 only 90,000 such Arab citizens were in Paris, today they have a colony in and around the metropolis with close to half a million members.

As French citizens, these migrant Moslems are not subject to any segregation, and they are at present under *no public health control*. Their arrival at any time may mean therefore a serious epidemic. Their presence is noted only at the employment bureaus, at the offices of the Social Security, at the Housing Agency, at the child welfare centers, etc. The main reason for the Algerian migration is that, due to the French medical

care through decades of the so-called French "colonialism," and by the resulting reduction of the high mortality rate from such decimating deceases as malaria, amebiasis, syphilis, and tuberculosis, the Algerian population has been steadily growing, and the *demographic pressure* is now ten times as large as it was a century ago. Since the local resources have not advanced at the same tempo as the Algerian births, the Moslems have to seek their living and the food for their families in France, especially at the metropolis. They usually come first on a sort of "economic mission," and will stay 2-3 years. Nowadays, more and more make their final settlement in Paris, where at present the implanted Algerian families number 25,000. Most of the workers are unskilled, but soon they specialize; a small percentage is the representation of qualified expert workers (7.6%).

Several of the ministries of France are interested in some kind of organization of the *Moslem migrants*; they are the Department of Interior, Department of Labor and Department of Health and Population. In addition to this, more than 150 private associations supplement the public actions. One of the health problems is that the Moslem workers are not particularly clean; they also resist any elementary measures of preventive medicine. Although few among them may harbor amebiasis, or malaria, or the various parasitic diseases, their *susceptibility to tuberculosis* is very high, twice as high as among the native Parisians. This may be due to the fact that the Moslem worker gives all his earnings to his family, and is willing to bear all sorts of privations on account of his wife and children. Some industrial enterprises therefore tried to organize *gratis cafeterias* where eating would be obligatory to the employed workmen.

The housing of these Moslem workers is

at a very low level. For many years they used to live in the temporary barracks which were partly the residues of former world wars around the French towns. These slum dwellings, which the French appropriately call "bidonville" or "Biscuit-ville," are now gradually being destroyed, and replaced by ultra-modern apartment houses not only in Paris, but also at such cities as Nanterre, Marseille, Lyon, etc.

The medical aid for the Algerian migrants around Paris has been greatly increased, especially in the industrial areas of the capital. France built for them new dispensaries, consultation centers for mothers and children. Of course, the workers give most work to the tuberculosis specialists, since about from 20 to 40% of the patients in the French tuberculosis sanatoria are Moslem workers. They have the clinical forms of subacute, exudative tuberculosis which responds very well to chemotherapy. Yet, it takes every effort to keep them in the sanatorium until the end of a full cure. The Algerians leave the sanatoria prematurely and return to their work. Since many of them are illiterate it is very hard to work out any new occupational scheme for them after they leave the tuberculosis sanatoria. Some of these institutions have started, therefore, to provide elementary instruction for these patients so that a discharged tuberculous Moslem can assume a less exhaustive job.

Among the West-Indian islands, *Jamaica* is one which can boast of the progress of its medical services and health conditions. The island has 21 general hospitals which are under the control of the government. The daily cost for a private room is less than \$2.00. But the Jamaicans still prefer to get medical care virtually free at the hospital of the University College of the West Indies, and at Kingston General Hospital. For a population of 1,650,000, Jamaica has only 300 doctors of whom only 180 are engaged in private practice. There is also a shortage of nurses. Doctors are partly immigrants. Some are graduates (30 a year) from the Medical School of the University College.

The health statistics show that Jamaica's

health problems are greatly reduced. The infant mortality rate is now only 67.8 per 1000, while at the start of this century it was 192 per 1000. The birth rate has increased; it is now 38.86 per 1000. Malaria has been virtually eliminated; likewise the disfiguring yaws. The government is now amidst a 10-year (1957-1967) health program which provides for the erection of 100 health centers in the communities throughout the island. At present, 47 are in operation. They are staffed with a resident nurse, and a visiting doctor and dentist. These centers have ambulances on call. Doctors visit twice weekly in rural areas, and six days a week in urban areas. The resident nurses are qualified to deal with minor ailments, simple drugs, and to recognize problems which are of an emergency nature.

A fantastic report reaches us via Germany from Jugoslavia. It is about an extraordinary type of self-provoked abortion which could be called an "auto-Cesarean operation." The operator was a 26-year old *Jugoslav peasant girl* who was living in Croatia. She became pregnant out of wedlock, and reached the 7th month of gravidity. Her boy friend had to return "suddenly" to America where previously he spent three years in employment. The girl was embarrassed. She wished for a quick return of her boy friend. Therefore, she decided that she would secretly provoke her abortion. Equipped with a razor, the kind which barbers use and, with a spool of white thread and a needle, she went into the thick of a neighboring forest. There, at a half-prone position, she made a deep incision through the wall of her abdomen, on the left side of the navel. With her hands, she widened the edges of the wound, held them apart, pushed the intestines aside, and reached the uterus. She made a transverse incision, pulled the fetus out, and threw it into the neighboring thicket. Then, still being conscious, she sewed the abdominal wall with the thread, but did not touch the uterus, which thus remained gaping. She stood up, and on a stony pathway she walked home, a distance of a kilometer and a half; she went to bed, stayed at home 10 days, when her

general condition required hospitalization. She died from infection. The autopsy showed an 8.5 cm long healing abdominal incision. All the intestinal loops were agglomerated due to the adhesions which developed at the site of the wound. An abscess was found. The uterus was open, and the placenta was still in it in a necrotic state. The case is remarkable because it shows how much pain a woman, anxious for her reputation, is able to tolerate. It is also interesting that death was due to infection, and not to the surgical intervention itself.

Recently, during a 3-week sojourn in Czechoslovakia, a Polish physician (J. Doroszowski) studied the situation of the *biological use of radioisotopes in the Czechoslovakian Republic*. The Czechs do not have at present specially constructed buildings for radioisotope centers. The existing buildings are adapted for this purpose. Laboratories, which are only for experimentation, are placed usually away from the ordinary business of the institution, perhaps in a corner or in a secluded portion of the building. The *medical isotope laboratories* are usually composed of such rooms as the active workshop, measuring room, treatment room, physical workshop, medical room, bath, waiting room, wardrobe. The walls of the rooms where large amounts of radioactive substances are expected to be handled are made of a 30-cm thick concrete. The floors are covered with an asphalt layer which is a good material, since, in case of contamination it can be washed off with acetone that will dissolve the top layer of asphalt. The doors are leaded. The walls are painted in white oil color, and all corners and edges are rounded off. Special ventilation is provided. Air filters are used where there is a chance for the production of radioactive aerosols. The radioactive substances are kept in containers which are placed mostly in the corridors or in the workshops.

Most of the equipment of the radioisotope laboratories is of Czechoslovak production. Little is imported. *Czech manufacturers* produce decadal computers. The Tesla Enterprises make a large number of Geiger-Müller

counters. Soon, scintillation counters will be domestically supplied. The native industry also supplies the so-called Ra-X-meter, Type 6, individual dosimeters, e.g., Type DI for 20 mr. ionization chambers for alpha, beta and gamma radiation, etc. Many finer implements are manufactured at the laboratories themselves.

The Czechoslovak Republic has two main *codes for the safety and hygiene of work with radioactive substances*. These codes include problems of buildings, of equipment of the isotope workshops, also the method of work, decontamination, removal of waste products, and so on. The individual workers as well as the control organs strictly observe these regulations. The control organ is the Sanitary-Epidemiological Service which has central, regional and area offices, and the Institute of Work Hygiene and Occupational Diseases at Praha. The dosimetric control is at present limited to the control of the roentgen diagnostic offices. The control is done once a year, at least theoretically. The inspection is actually less frequent, due to lack of qualified personnel.

The individual worker also strictly observes the rules. He always wears white clothes and rubber boots, even in places of low activity level. The *working clothes are checked for activity* before they are delivered to the laundry. It is also a safety rule that practically nowhere do they use radioactive carbon C14. The recording of the dosage received by the workers is accurately listed. For this control, individual dosimeters are used, while the light-sensitive control films are not used at all, since they have small, if any, accuracy.

The *task of training* the workers in the field of radioactive isotopes is still not completely solved. The workers become acquainted with the principles of radioactive work in their own isotope departments. This concerns chiefly the physician oncologist, the radiotherapists and the scientific workers of other specialties, such as internists, endocrinologists. The training is not organized systematically, and there are no textbooks in the field of *isotope medicine*.

The physicists and technicians, with intention to enter the health service or a biological institute, are trained in proper courses which are organized by the *Czechoslovak Institute of Nuclear Researches*. At every radiotherapeutic or isotopic institute, at least one physicist or engineer is working. Close co-operation between physicists, engineers and physicians is characteristic of the Czechoslovak scientific and therapeutic institutions. This kind of cooperation is a problem in every country. *Work in thyroid therapy* is carried out in four centers: (a) the Scientific Endocrinology Institute at Praha, (b) the Scientific Oncology Institute at Bratislava, (c) the Department of Radiology of the Military Medical Academy at Hradec Králové, and (d) at the Endocrinology Institute of the Slovak Academy of Sciences at Bratislava. The Praha Institute has had the greatest achievements in the diagnostic and therapeutic field of thyroid hyperfunction and thyroid cancer. Radioactive iodine is used in doses of 100-200 mc(millicurie). In the Bratislava Oncological Institute, *gamma-graphic studies* of the thyroid are also made with specially constructed apparatus. The blood circulating volume is measured with the aid of radioactive phosphorus P-32. The latter substance is also used for the *treatment of erythremia and leukemia*. The Radiology Department of the Military Medical Academy is particularly interested in beta-radiation treatment of superficial neoplasms, and in the treatment of neoplastic metastases with the aid of an intravenously given radioactive phosphorus solution.

Generally speaking, the Czechoslovak biologists and physicians are using mostly radioactive iodine (I-131) and phosphorus (P-32) for therapy and diagnosis, while the other isotopes are mostly for scientific research (S-35, Fe-59 and some C-14). All isotopes are ordered from the Soviet Union or from England. They are controlled by the *Scientific Radiological Institute at Praha* as to quality and purity; subsequently, suitable chemical compounds are prepared and distributed to the radioactive laboratories. Radium preparations and radium-beryllium

preparations of neutron sources are also supplied by this Institute.

*Conditions in Romania* cannot be the best for medical men and for scientists, judging from the personal report of a high-ranking research man. He repeatedly tried to get a scholarship for foreign travel, and thus to escape from his country, but his superiors had always cancelled the approval for his departure. One of the most exasperating factors in the life of today's Romanian scholar is the *atmosphere of intrigue* (they call it "class" struggle) which surrounds him both in the institution and in the daily life. This is the result of the overall penetration of politics. In the scientific institutes those who are the least prepared for scholarly work are usually the most active in politics. The continued spying upon each others' affairs creates a *tension and a feeling of insecurity*. Only a few are able to isolate themselves in their "ivory towers" so that they can forget the world in which they are living, and can spend a little time in reading, and in creative work. The others will worry themselves either into a nervous breakdown, while they are young, or into coronary attacks, when they reach the more advanced age. Blessed is the one whose nerves are so blunted that he can be satisfied with just being alive, leading the life of an animal, eating, and sleeping at home, and not in a dungeon of the security police.

When we take into hand any of the Romanian professional magazines, we find references on every page to the *six-year and the ten-year plans*, with exorbitantly growing figures of production, and with promises that the salaries and wages will rise by a large percentage at such and such a date; that the production costs and the prices of the goods will come down; that the living standards of the workers, peasants, intellectuals, and functionaries will be raised; that all this will happen as the People's Republic of Romania is coming closer and closer to 1975, the terminal date for the "construction of socialism," and the switch-over date to the "construction of communism." This *enforced production and overproduction*, and the communistic

spirit of "rivalry" is such that even such former classical temples of science as the Romanian Academy of Sciences is now entirely in the yoke of the producers and industrial enterprises. There is no basic research anymore, only applied research; and there is no true research institute left in Romania.

On the other hand, the domestic markets are supplied only with second-class goods. Anything that reaches an international standard is set aside for export. No wonder that Romanians have lost, for instance, their confidence in the *domestic drugs*. They are willing to pay enormous blackmarket prices for the smuggled-in foreign drugs. A dose of vitamin B<sub>1</sub> of American origin will bring 5 leis, and a tablet of cortisone 30 leis. The population prefers the *foreign-made penicillin* preparations to the native products. Yet, foreign medicaments are no more imported, and the government erects great obstacles against the arrival of medicinal packages from abroad, even though treatment is often impaired in the hospitals for this reason.

Recently, the Economic Board of Mutual Aid brought a decision which limits the *Romanian pharmaceutical industry* to the production of penicillin, strepto- and aureomycin. Chloramphenicol, which had been already synthetically prepared by a professor at Cluj (:Kolozsvár) University about 1955, still cannot be industrially produced, due to lack of proper installation. Aureomycin, a tetracycline, is identical with the Russian biomycine; the Soviet sold the patent to Romania, but the method of purification of the antibiotic was not given away. Bulgaria is in about the same situation, as to the matter of antibiotics, as Romania. Poland and Czech-

oslovakia are more advanced in antibiotic production. The general interest in this type of drugs is proved by the fact that several conferences have already been held on antibiotics in the Iron-Curtain countries (e.g., at Warszawa in 1956, in China in 1957, etc.).

As to the *salaries of Romanian technical experts and doctors*, we may quote from the payroll of a certain manufacturing institute of biological products. The chief engineer of this establishment gets 2000 leis per month, with a premium if he exceeds his monthly prescribed quota. Section chiefs earn 1600-1800 leis per month. A laboratory chief receives 1200-1600 leis monthly. Others, including physicians, may have a salary between 900 and 1200 leis per month. But a young graduate, for instance, has only 750 leis for a month, and he cannot expect a raise before doing four years of service. Tough is the situation also for young physicians, unless they go into the rural service, when after 3 years they may expect a promotion.

At a question and answer period, the *Health Minister of the Union of India* explained that, in the Irwin Hospital at Delhi, research was carried out to show the *health hazards of nylon fabrics*, of rubber shoes, and lipstick. The Minister was asked whether he would venture some good advice to women on the basis of such research. He follows the general policy of the Indian government in the greater and greater industrialization of India. But if damage to health would be caused by any particular industry, the government would not hesitate to shut off such an industry. "To all women, who come to me for advice"—said the Minister of Health—"I shall advise them *not to use lipstick in any case*. But about nylons, I have an open mind." . . . *Multa paucis!*

## NOTES

Timely items of general interest are accepted for these columns. Deadline is 1st of month preceding month of issue.

### Department of Defense

*Senior Medical Advisor*—FRANK B. BERRY, M.D.

*Deputy Ass't Sec'y of Defense (Health and Medical), Off. Ass't Sec'y of Defense for Manpower*—EDW. H. CUSHING, M.D.

#### HEADS MEDICARE

Colonel W. D. Graham, MC, USA, has succeeded Brig. General Floyd L. Werge-land, as Executive Director of the Office for Dependents' Medical Care. General Werge-land has become Commander of Walter Reed General Hospital.

Colonel Graham, a graduate of the University of Minnesota, entered the Army in 1934. He has his Master's degree in Public Health and is a graduate of the Army War College (1958).

Between Medicare's inception in December 1946 and December 31, 1960, the government has paid out \$270 million for medical care of servicemen's dependents by civilian doctors in civilian hospitals, and an additional \$15 million in billings are yet to come.

Over 1.1 million patients have been accommodated—625,000 maternity and 95,000 gynecological cases; 230,000 surgical admissions, and more than 205,000 medical cases. Medicare patients, or their sponsors, have paid almost \$30 million out of their own pockets. Medicare's cost is borne 90.7 percent by the U. S. Treasury and 9.3 percent by the patient.

#### RADIOBIOLOGY RESEARCH INSTITUTE

The Board of Governors of the Armed Forces Radiobiology Institute (AFRRI)

met recently at the Headquarters, Defense Atomic Support Agency, and nominated the following officers for the Directorate of the Institute: Colonel James T. Brennen, MC, USA, Director; Captain Francis W. Chambers, Jr., MSC, USN, Deputy Director; and Lt. Colonel Carl Hansen, MC, USAF, Deputy Director.

In addition to the nominations for the Directorate, Captain Frank Norris, MC, USN; Lt. Colonel Michael M. Conrad, MC, USAF; and Lt. Colonel R. F. Lerg, MC, USA, were named to represent the three Services as members of the AFRRI Ad Hoc Manpower and Resources Committee.

The Armed Forces Radiobiology Research Institute at the National Naval Medical Center, Bethesda, Maryland, will include a Department of Defense nuclear reactor facility under the sponsorship of the Defense Atomic Support Agency. The facility is being built in order that broad research programs dealing with the biomedical effects of radiation may be carried out by scientists of the three services, other federal agencies and civilian organizations. This will be the first pulse type reactor designed solely for medical research. Completion is expected in early December of this year.

### Army

*Surgeon General*—LT. GEN. LEONARD D. HEATON

*Deputy Surg. Gen.*—MAJ. GEN. THOMAS J. HARTFORD

#### ARMY VETERINARY CORPS' 45TH ANNIVERSARY

Established on 3 June 1916, the Army Veterinary Corps has made steady progress in the fields of food inspection, training, and research. Such a record has encouraged allied nations to seek our technical advice and assistance, according to Brigadier General Russell



U. S. Army Photo

BRIG. GEN. RUSSELL MCNELLIS, VC, USA

McNellis, VC, Assistant for Veterinary Services, Office of The Surgeon General, on the occasion of the Corps' 45th birthday.

The Army Veterinary Corps consists of commissioned officers who are graduate veterinarians of approved colleges of the United States and Canada. It is supported by enlisted members of the Army Medical Service. Military veterinary medicine utilizes fully the veterinary medical arts and sciences as applied to the prevention of disease.

The original mission of the Corps was to provide medical care for military animals and to inspect foods procured for military consumption. Scout and sentry dogs are the animals principally used by the Army today. In addition, Army veterinarians are concerned with the procurement, breeding, care, and management of many other types of animals required for research.

Food inspection, almost from the outset the Corps' primary responsibility, utilizes the Army veterinarian's knowledge of food technology, microbiology, chemistry, and bacteriology, to insure that only safe and wholesome food reaches the soldier.

Today, members of the Corps are also engaged in research directed toward defense against radiological, chemical, and biological agents and other emerging aspects of modern warfare. They conduct the chemical and bacteriological analysis of foods, and assist in research involving biomedical problems.

Veterinary officers have been included in most scientific groups for the nuclear weapons test series conducted in Nevada and the Pacific. They have participated as instructors and staff members of the Oak Ridge Institute of Nuclear Studies for courses in veterinary radiological health. An Army veterinarian was part of the team that successfully fired a project Mercury-Redstone Missile into space with a capsule containing the now-famous chimpanzee "Ham."

Among its achievements over the years, the Army Veterinary Corps has developed tuberculosis-free dairy herds and established a sanitary milk supply in Eritrea, North Africa. It established a similar program to insure fresh milk supply for our troops stationed in Europe.

The Corps has developed a vaccine for prevention of rinderpest, and also a sonic-vibrated leptospira antigen for the serological diagnosis of leptospirosis. It has demonstrated how equine encephalomyelitis is transmitted to humans, and the value and safety of tetanus toxoid in animals prior to its use for humans. It has established a leptospira research and diagnostic center providing service to the three military departments and the Veterans Administration. This center functions as a Pan-American reference laboratory for the World Health Organization.

A look to the future of the Army Veterinary Corps promises opportunities for veterinarians in all phases of their profession.

#### EISENHOWER'S PHYSICIAN

Major General Howard McC. Snyder, MC, USA, Retired, former President Eisenhower's personal physician, has been awarded the Legion of Merit Medal for meritorious service during the past decade.

Lt. General Leonard D. Heaton, The Surgeon General of the Army, made the presentation and read the citation which reads in part:

"The unusual medical skill, dedicated devotion and understanding sensitivity which he manifested in support of all requirements of this important duty insured that all activities involving the health and welfare of the President, members of the President's family and the White House Staff, were conducted in accordance with the highest possible standards. His many singular accomplishments were of great value to the overall successful completion of the Presidential mission, and earned the high regard and admiration of all associated with him. General Snyder's distinguished performance of duty throughout this period represents outstanding achievement in the most cherished traditions of the United States Army, and reflects the utmost credit upon himself, the Army Medical Service, the medical profession, and the military establishment."

#### HONORED

Major General Alvin L. Gorby, MC, U. S. Army, Retired, recently was awarded the First Oak Leaf Cluster to the Distinguished Service Medal. The Gorbys reside at June Allen Beach, Santa Rosa Beach, Fla.

#### ASSIGNMENTS

Brig. General George M. Powell, MC, USA, will assume command of Brooke General Hospital this month. His former command was Madigan General Hospital.

Brig. General John I. Crawford will assume command of Madigan General Hospital, Tacoma, Washington in July. He has been in command of the Landstuhl Army Medical Center in Germany.

#### ARMY ORGANIZATION STUDY MEMBER

Colonel Leo E. Benade, MSC, Chief of the Special Projects Office, Directorate of Personnel and Training, Surgeon General's Office, is a member of the Hoelscher Committee which has been established at the di-

rection of the Chief of Staff of the Army.

Colonel Benade has served previously on the Cordiner Committee for study of military pay, has served in the Office of the Secretary of Defense, is a graduate of the Army War College and the Army Command and General Staff College.

The purpose of the Hoelscher Committee is to develop possible modifications in both organization and procedures which will enhance the capability of the Army to carry out its mission.

#### AUTHORIZED "A" PREFIX

Colonel Edward J. Dehné, MC, USA, Director of the Department of Preventive Medicine at the Medical Field Service School, Fort Sam Houston, Texas, has been authorized the "A" prefix in recognition of professional proficiency.

The "A" prefix to one's category number designates the individual as one having outstanding qualifications in his specialty and qualified to teach at professor level.

Colonel Dehné, a graduate of the University of Oregon School of Medicine, holds a Masters and Doctorate degree in Public Health from Johns Hopkins University.

#### NEW DIRECTOR, WRAIR

Colonel Conn L. Milburn, Jr., MC, USA, succeeds Colonel R. P. Mason as Director of the Walter Reed Army Institute of Research, Washington. Lt. Colonel W. H. Meroney III, recently Commander of the Army Tropical Research Medical Laboratory, Puerto Rico, has been named as Deputy Commander of the Institute.

Colonel R. P. Mason upon his retirement will be associated with the American Cancer Society, New York.

#### ASSIGNED FIRST ARMY

Lt. Colonel Lionel H. Schmahmann, MSC, has been assigned to the Headquarters First U. S. Army Inspector General section. He was previously commanding officer of the 168th Medical Battalion, Seventh Logistical Command, in Korea.



U. S. Army Photo

(L to R) MR. PETER MANTEGNA, vice president, Piracci Construction Co., Baltimore; COL. CLARENCE BINGOOD, CE, 2nd Army; COL. LEONARD F. WILSON, MC, USA, Second Army Surgeon; BRIG. GEN. JOHN R. PUGH, Chief of Staff, Hq. Second U. S. Army; COL. JOSEPH M. BLUMBERG, MC, USA, representing the Surgeon General of the Army; COL. PHILLIP H. POPE, Fort Meade Commander; COL. WARREN R. JOHNSON, District Engineer, Baltimore.

#### MEDICAL LABORATORY

A Ground Breaking Ceremony took place on March 30 for the Second U. S. Army Medical Laboratory, Fort George G. Meade, Maryland.

The first shovelful of dirt was turned over by Brig. General John R. Pugh, Second Army Chief of Staff. The second shovelful was turned over when Colonel L. F. Wilson, Second Army Surgeon, and Colonel Joseph M. Blumberg, Deputy Director, Armed Forces Institute of Pathology, representing the Surgeon General of the Army, placed their feet on the shovel brought from the AFIP and which had been used at the Ground Breaking Ceremony in 1951 at the Institute.

Completion of the \$1.5 million laboratory is expected sometime in 1962. The building will be 144 feet long and 70 feet wide, will have three floors and a full basement.

#### IRANIAN OFFICERS VISIT BROOKE CENTER

Recently when a group of Iranian military medical leaders visited Brooke Army Medical Center, Ft. Sam Houston, Texas, they were greeted by some U. S. officers that had served with them in Iran's Military Advisory Group. Medical matters of both countries were discussed.



U. S. Army Photo

(L to R) COL. CHASSEM NIK-NEJAD, Aide-de-Camp to King of Iran; COL. ALI MORADI, Laboratory Chief of Iranian Army Medical Dept.; MAJ. GEN. MOHAMAD SHAMS, Iranian Surg. Gen.; BRIG. GEN. JAMES W. HUMPHRIES, JR., Commander Lackland AFB Hosp.; LT. COL. JOSEPH R. DEVINE, Project Officer, Med. Field Serv. School; MAJ. GEN. AHMAD MIR-AFZALI, Chief, Iranian Med. Dept.; BRIG. GEN. Morteza KANI, Chief, EENT Hosp., Teheran; LT. COL. DALE R. GREENLIEF, Fourth U. S. Army.

#### PREVENTIVE DENTAL HEALTH PROGRAM

At Fitzsimons General Hospital, Denver, Colonel Jack B. Caldwell, Chief of the Dental Service, has been implanting the thought in others that if we are ever going to get ahead of this dental caries problem there must be continuous education in preventive measures. He has initiated a series of lectures, some of which are illustrated with slides, to instruct the members of the command in the proper methods of caring for their teeth. There is more to it than just the brushing of the teeth although admitting that is very important.

Control measures include: reduction in the daily consumption of carbohydrates; brushing the teeth at the most effective times; and fluoridation of the drinking water supply. Colonel Caldwell has pointed out that sugar consumption has increased in the United States from 12 pounds per person in 1834 to 100 pounds per person today. He says that the brushing of teeth immediately after food is taken is exceedingly important to the caries-susceptible age groups of young adults.

#### GUEST SPEAKER

Colonel Roland I. Pritikin, MC, USAR, Rockford, Illinois, was a speaker at the 81st

Annual Congress of the Ophthalmologic Society of the United Kingdom held in London, April 12, 15. The subject of his paper was "Eye Surgery of Mass Casualties Without Modern Hospital Facilities."

#### RETIRED

Colonel Roy L. Bodine, DC, USAR, ended 26 years of military service when he retired from the Army in March. He has become associate professor at the University of Puerto Rico Dental College, San Juan, P.R.

#### H-SHAPED FOXHOLES

During a training exercise at Fort Benning, Georgia, recently the 50th Medical Clearing Company used an H-shaped fox-hole for simulated casualties.



*U. S. Army Photo*

Sgt. TED COLLINS, 50th Medical Clearing Company, attends two simulated litter patients.

## Navy

*Surgeon General—REAR ADM. EDWARD C. KENNEY*

*Deputy Surgeon General—REAR ADM. ALLAN S. CHRISMAN*

#### RECEIVES AWARD

Captain Ashton Graybiel, MC, USN, Director of Research at the Naval School of Aviation Medicine, Pensacola, Fla., recently received the 1961 Eric J. Liljencrantz Award which is presented annually by the Aerospace Medical Association for important contributions to the medical aspects of acceleration and high-altitude. The award is sponsored by

Chas. Pfizer & Co., Inc., of New York.

Dr. Graybiel is a graduate of the Harvard Medical School (1930). He specialized in the cardiovascular system, studying under a number of research fellowships in the 1930s and concentrated on phenomena related to pilot fatigue during World War II. He is a past president of the American College of Cardiology and is an associate professor of medicine at the University of Alabama Medical School.

#### DR. KARSNER HONORED

The fifth annual Robert Dexter Conrad Award was recently presented to Howard T. Karsner, M.D., LL.D., Medical Research Advisor to the Surgeon General of the Navy.

The citation reads as follows:

"As advisor on medical research to the Surgeon General since 1949, you have brought your wisdom and broad experience to bear on the needs of medical research in the Navy. Your sound judgment has been invaluable in recognizing and determining the areas of research of greatest importance. Your breadth of vision has recognized appropriate support of fundamental research as essential. At the same time you have never overlooked the utility of existing fundamental knowledge as applied to present Navy problems. You have recognized the importance of organized clinical research in naval hospitals, and the necessity of operating laboratories in areas outside the continental limits of the United States.

"The policies adopted with your support have established Navy Medical research on a high level which will continue to constitute a firm basis for increasingly strong development far into the future."

#### DIRECTOR OF MEDICAL CENTER

Dr. James M. Faulkner has been named Director of the Boston University-Massachusetts Memorial Hospitals Medical Center. A captain in the U. S. Naval Reserve, he was awarded the Croix de Guerre in 1918 and the Navy Commendation Ribbon in 1944.

## NAVY AIDS ETHIOPIA

A medical team led by Captain Sidney A. Britten, MC, USN, Officer in Charge, U. S. Navy Preventive Medicine Unit No. 7, Naples, Italy, went to Addis Ababa, Ethiopia, to assist that government in the yellow fever epidemic in the southwestern part of the country.

Three hospital corpsmen with two Multi-dose Automatic Jet Injectors on loan from the U. S. Naval Air Station, Norfolk, Va., joined Captain Britten and Commander L. W. Teller, MSC, USN, Entomologist of PMU #7.

The team is prepared to vaccinate some 100,000 persons in a very short time using the Jet Injectors. They will also provide entomologic and epidemiologic assistance to the people of Ethiopia in this fight against yellow fever.

## NEW PARTICIPATION REQUIREMENTS

Commencing July 1, 1961, all officers, who fail to earn at least 12 retirement points (exclusive of the 15 gratuitous points) during any anniversary year ending after that date will be removed from an active status if they:

- (1) Have completed their obligated service (8 years membership in the Armed Forces, if enlisted or appointed on or before August 9, 1955, six years membership if enlisted or appointed after that date).
- (2) Have been commissioned eight years, if appointed on or before August 9, 1955, or six years if commissioned after that date.
- (3) Have been on inactive duty for three years.

## RETIRED

Captain Merritt J. Crawford, DC, USN, was recently retired from the Navy after thirty years service. His last duty station was the Naval Shipyard, Mare Island, California.

The following Medical Service Corps Officers recently retired from the Navy: Commander Gilbert R. Ball, Lieutenant Commanders William H. Henning, Albert P. Hutchinson, and Charles R. Thompson.

## Air Force

*Surgeon General*—MAJ. GEN. OLIVER K. NIESS

*Deputy Surg. Gen.*—MAJ. GEN. RICHARD L. BOHANNON

## BECOMES DEPUTY SG

Major General Richard L. Bohannon, USAF, MC, has succeeded Major General John F. Cullen, as Deputy Surgeon General of the U. S. Air Force.

A native of Dallas, Texas, Dr. Bohannon has served in the Medical Corps of the Army and of the Air Force for more than 26 years. He is a graduate of the Baylor College of Medicine (1932). He is a diplomate of the National Board of Preventive Medicine (Aviation Medicine).

His most recent assignment was that of top U. S. Air Force medical officer of the Pacific/Far East area. In this position he supervised the administration and operation of 14 Air Force hospitals and dispensaries at bases throughout Japan, Korea, Okinawa, Taiwan, and the Philippines. He has been honored by several countries for his activities in promoting good medical relationship with those countries. His philosophy is that medicine knows no boundary lines.



U. S. Air Force Photo

MAJ. GEN. RICHARD L. BOHANNON, USAF, MC

**TO BRIGADIER GENERAL**

Brig. General Wilbur A. Smith, USAF-R, MC, was recently promoted to that rank. He is an associate medical director of The Equitable Life Assurance Society of the United States, 393 Seventh Avenue, New York 1, N.Y.

General Smith is Past President of the New York Chapter of the Association of Military Surgeons.

**BACTERIAL SPORES SURVIVE RADIATION**

Ampules of bacterial spores aboard both the Discoverer 17 and 18 satellites survived radiation even from a third magnitude solar flare.

Major Irving Davis, Ph.D., at the School of Aviation Medicine, Brooks Air Force Base, did the work of preparing the ampules of the bacterial spores and controls. On recovery of the capsules from the satellites, the ampules were returned to the School at Brooks and placed in very hot solutions of caramelized sugar. The control specimens were killed; the radiated specimens survived the treatment. Dr. Davis said, "These findings suggest that this particular spore system may find use as a biological index of the space radiation hazard."

## Public Health Service

*Surgeon General*—LUTHER L. TERRY, M.D.  
*Deputy Surg. Gen.*—JOHN D. PORTERFIELD,  
M.D.

**COAST GUARD APPOINTMENT**

Dr. Howard D. Fishburn, a career officer of the Public Health Service, was appointed Chief Medical Officer of the U. S. Coast Guard, effective May 1. He succeeded Dr. Kenneth R. Nelson who retired to become Commissioner of Hospitals for St. Louis, Mo.

The position of Chief Medical Officer carries with it the rank and title of Rear Admiral. There are some 90 Public Health Officers on duty with the Coast Guard which is under the Treasury Department in time of

peace. These officers include physicians, nurses and other health personnel.

Dr. Fishburn, a native of Burr Oak, Kansas, is a graduate of the University of Colorado School of Medicine. He was commissioned in the Regular Corps of the Public Health Service in 1929.

**RE-ELECTED**

Dr. Thomas G. Parran, a former Surgeon General of the U. S. Public Health Service has been re-elected president of the National Vitamin Foundation. He is also president of the Avalon Foundation.

**GRANTS FOR NURSING RESEARCH**

Those who have some project pertaining to research in nursing may be eligible for a grant from the Public Health Service to carry on the work.

Since 1955, \$5½ million has been awarded for a total of 96 nursing research projects. About half of the principal investigators have been nurses. However, physicians, educators, social scientists, engineers and hospital administrators have been given awards for projects they had in mind.

The National Advisory Health Council make a recommendation to the Surgeon General of the Public Health Service on the research proposal before approval is given.

Applications may be obtained from the Research Grants Branch, Division of Nursing, Public Health Service, U. S. Department of Health, Education, and Welfare, Washington 25, D.C.

**PROCEEDINGS AVAILABLE**

*Conference on Physiological Aspects of Water Quality* which was held in Washington, September 8-9, 1960, now has its proceedings in printed form. Copies are available from: Research & Training Grants Branch, Division of Water Supply and pollution Control, Public Health Service, Washington 25, D.C.

**LEPROSY FILM**

A 16 mm, color, sound film (M-374), running time 19 minutes, is available on "Man-

agement of the Leprosy Patient." For loan of this film address Communicable Disease Center, Atlanta 22, Georgia. Attention Audiovisual.

Leprosy is being successfully treated at the U.S. Public Health Hospital, Carville, Louisiana. The complete medical care, specific treatment with sulfone drugs, occupational therapy, and the cultivation of new abilities are shown on the film.

Leprosy is significant health problem in the world. It is estimated that there are more than ten million cases. Yet with modern treatment there is great hope if the patient can be started on treatment before disfigurement occurs.

#### LABORATORY REFRESHER TRAINING COURSES

The Laboratory Branch of the Communicable Disease Center, Atlanta, Georgia, will hold the following courses from September 1961 to April 1962:

#### DATES AND COURSES

##### 1961

Sept. 11-Oct. 6—Laboratory Methods in Medical Parasitology Part 1. Intestinal Parasites (800). Closing Date: July 31, 1961.

Sept. 18-29—Fundamentals of Virology (819). Closing Date: August 7, 1961.

Oct. 2-13—Fluorescent Antibody Techniques in Streptococcus Grouping (860). Closing Date: August 21, 1961.

Oct. 9-27—Laboratory Methods in Medical Parasitology Part 2. Blood Parasite (801). Closing Date: August 28, 1961.

Oct. 23-Nov. 3—Fluorescent Antibody Techniques in the Public Health Laboratory (845). Closing Date: September 11, 1961.

Oct. 30-Nov. 17—Laboratory Methods in the Diagnosis of Viral and Rickettsial Diseases (820). Closing Date: September 18, 1961.

Nov. 27-Dec. 1—Laboratory Methods in the Diagnosis of Rabies (826) Closing Date: October 16, 1961.

Dec. 4-8—Bacteriophage Typing of Staphylococci (856). Closing Date: October 23, 1961.

##### 1962

Jan. 8-Feb. 2—Laboratory Methods in Medical Mycology (815). Closing Date: November 27, 1961.

Jan. 15-26—Laboratory Methods in the Diagnosis of Tuberculosis (855). Closing Date: December 4, 1961.

Jan. 29-Feb. 9—Laboratory Methods in the Diagnosis of Tuberculosis (855). Closing Date: December 18, 1961.

Jan. 29-Feb. 9—Serologic Methods in Microbiology (941). Closing Date: December 18, 1961.

Feb. 12-23—Laboratory Methods in the Study of Pulmonary Mycoses (817). Closing Date: January 2, 1962.

Feb. 12-23—Fundamentals of Virology (819). Closing Date: January 2, 1962.

Feb. 26-Mar. 16—Laboratory Methods in Medical Bacteriology (838). Closing Date: January 15, 1962.

Mar. 5-9—Laboratory Diagnostic Methods in Veterinary Mycology (940). Closing Date: January 22, 1962.

Mar. 12-30—Laboratory Methods in the Diagnosis of Viral and Rickettsial Diseases (820). Closing Date: January 29, 1962.

Mar. 19-23—Special Problems in Medical Bacteriology (839). Closing Date: February 5, 1962.

Mar. 26-Apr. 6—Laboratory Methods in Enteric Bacteriology (850). Closing Date: February 12, 1962.

Apr. 9-13—Laboratory Methods in the Diagnosis of Rabies (826). Closing Date: February 26, 1962.

\*Laboratory Methods in the Diagnosis of Malaria (805).

\*Special Training in Virus Techniques (821).

\*Typing of *Corynebacterium diphtheriae* (842).

\*Special Problems in Enteric Bacteriology (851).

\*Phage Typing of *Salmonella typhosa* (852).

\*Laboratory Methods in the Diagnosis of Leptospirosis (853).

\*Serologic Differentiation of Streptococci (854)

### Special Problems in Microbiology (942).

Information and application forms may be obtained from the Laboratory Branch, Communicable Disease Center, U.S. Public Health Service, Atlanta 22, Georgia.

\* Courses given by special arrangement only.

## Veterans Administration

*Chief Medical Director*—WILLIAM S. MIDDETON, M.D.

*Deputy Chief Med. Dir.*—H. MARTIN ENGLE, M.D.

### STATISTICS

The Veterans Administration has released the following statistics for March 1961. Figures in parenthesis are for March 1960.

Veterans in Civil Life—22,436,000 (22,569,000); World War II—15,170,000 (15,212,000); World War I—2,592,000 (2,701,000).

Average daily patient load in hospitals—116,314 (116,510). Outpatient care (for month) 216,278 (219,171).

### NEW TREND IN PSYCHIATRIC CARE

The Veterans Administration, along with other groups in our country, is reducing the time that patients with mental diseases spend in hospitals. One of the methods is that of providing "half-way houses" where patients can complete the final stage of their recovery.

Most of the houses are operated by private individuals and with few exceptions the veterans pay for their maintenance from their own funds. The patients may come and go from the houses as they wish and need live there only until they gain the self-confidence necessary for making their own way in the world. The houses are associated with Veteran Administration hospitals so that social workers and physicians can give help. By gradual adjustment to the community way of life the veteran becomes rehabilitated and takes his place again in the world.

### REPRINT

*First Symposium on Oral Pigmentation* is a reprint from the *Journal of Periodon-*

*tology*, October 1960. A limited number of these reprints are available from the Dental Service, Veterans Administration Hospital, Tuskegee, Alabama, where the symposium was held. Address: Dr. Clifton O. Dummett, Chief of Dental Service.

## Miscellaneous

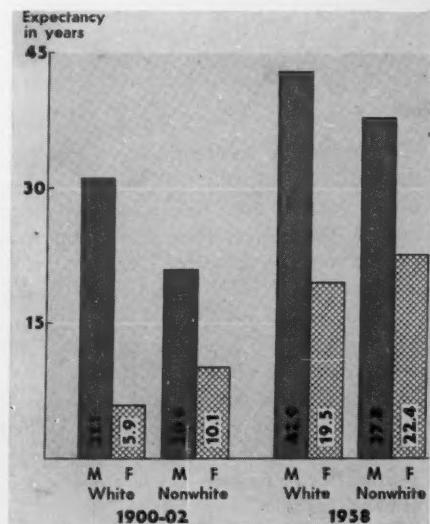
### NEW YORK CHAPTER

During the American Medical Association Meeting in New York, the New York Chapter of the Association of Military Surgeons will hold a cocktail party for all members of the Association including lady guests.

The party will be held June 28 from 6:00-7:30 p.m., at the Oak Room, National Guard Armory, 33rd St., and Park Avenue. Tickets may be purchased at the American Medical Association meeting. Cost is \$3.50 per person.

### WORKING-LIFE EXPECTANCY

It is no new knowledge that the life expectancy of a person in the United States has increased from 48 years at the turn of this century to 70 years now.



Health Information Foundation

Along with this extended life the working-life expectancy, of course, has increased. The

graph will show to what extent this working-life expectancy has increased.

#### FEDERAL HAZARDOUS SUBSTANCE LABELING ACT

Proposed regulations for the type of labeling that may be required under the new Federal Hazardous Substances Labeling Act were published in the Federal Register of April 29.

Persons interested may present their views on or before June 28, in writing, to the Hearing Clerk, Department of Health, Education, and Welfare, 330 Independence Avenue, S.W., Washington 25, D.C.

The new law requires consumer protection labeling on common household aids such as waxes, polishes, cleaning agents, bleaches, detergents, and wood finishes and their solvents, if there is a hazard in their use or storage around the home.

Besides the words "DANGER," "WARNING," or "CAUTION" you will find such words as "Vapor Harmful," "Causes Burns," "Keep Out of the Reach of Children."

Thus the labels on many articles in common use around our homes will have a new look and will warn us of dangers involved in their use. This should aid us also in storage of the items.

#### PERFORMANCE CAPACITY

A symposium, "Performance Capacity," was held by the Nutrition Branch, Food Division, Quartermaster Food and Container Institute for Armed Forces and Environmental Protection Research Division, Quartermaster Research and Engineering Center, Chicago, April 12 and 13, 1957.

This symposium is now in published form (paper back, 6 X 9 in., 257 pp.).

Why, with an abundant supply of all kinds of food, are the people of the United States faced with the problem of low physical fitness or better put—a low physical performance capacity?

The answers are probably not to be found in nutrition alone. This symposium, however, discusses the all important nutritional as-

pects. Dr. James A. Allison of Rutgers, said, "This conference represents in a sense the prologue to a new science that we ought to be developing—a science correlating and integrating chemical knowledge with performance capacity."

The "Performance Capacity" symposium does not close the door to research on this all important topic; in fact it stimulates one to think on the subject which is of vital importance to everyone, particularly to the military person.

A limited number of free copies are available for those with "a need to know." First consideration will be given to libraries. Address: Chief, Technical Office, Quartermaster Research and Technical Command, U. S. Army, 1819 W. Pershing Road, Chicago 9.

#### WATER CONSERVATION

Unless this country takes some immediate steps to curb the waste of water we are headed for serious trouble. There are many ways that this can be done. The storage of water by dams and formation of large lakes is one method. Reuse of water is another. *Science News Letter* (March 18) reports Mr. V. C. Williams, a consulting engineer, as stating that a steel company in California reduced its water consumption from 65,000 gallons to 1200 per ton of steel by the reuse of water.

Another project that must be pushed fast is the desalting of sea water. An economical way to do this must be found. Think what this would mean to a city like Los Angeles. And think what this would mean for countries with so much desert land.

#### EMERGENCY MEDICAL IDENTIFICATION

Our Association sent a delegate, Lt. Colonel George M. Beam, Executive Secretary, to the American Medical Association's National Conference on Emergency Medical Identification which was held in Chicago, April 13-14.

The purpose of this conference was to explore the feasibility of developing a voluntary nation-wide program whereby identify-

ing and medical data would be readily available on individuals in emergency situations, thus facilitating in their care. It is known that at the present time there are many ways of doing this, such as cards in wallets, necklaces, bracelets, but there is no one standard method; no one system whereby police, ambulance attendants, emergency room attendants and others might know exactly where to find this valuable information on an individual.

So important is this problem that there were delegates from 62 organizations who discussed the matter, first in small groups and then in general assembly with a spokesman for each group.

Further conferences are to be held after more opinions are obtained. Those with any ideas on the subject might present their views in writing to the American Medical Association (Medical Identification Program), Chicago 535 N. Dearborn Street.

#### MEDICAL PROJECTS

There are 22,924 Government supported biomedical projects on the books, according to Senator Hubert Humphrey. The cost of these is more than \$455 million.

#### FLUORESCENT LIGHTING

In light sensitive individuals fluorescent lighting may be sufficient to aggravate skin conditions, according to Dr. Earle W. Brauer of New York University School of Medicine. Normal individuals are not affected and only those sensitive persons who remain under such lighting for long periods of time, such as office workers, are apt to be affected.

#### VIRUS ANALYSIS

The smallest virus known to science has been purified, weighed, chemically analyzed, photographed and taken apart at the University of Wisconsin.

Dr. Paul J. Kaesberg and biochemistry graduate student Larry E. Bockstahler are of the opinion that their work could lead to new knowledge of viruses that cause many diseases. Their work was done with the

Bromegrass Mosaic Virus (BMV) which causes mottling and streaking of the leaves of smooth Brome Grass, a common prairie grass. The virus can infect grain crops like wheat, rye and corn.

Dr. Kraesberg estimated that about 3000 BMV viruses (which are half the size of the polio virus) if laid side by side would make a pile about the thickness of a sheet of mimeograph paper.

We are on the frontier of the virus kingdom. There is a vast area to explore and with the electron microscope, the micro-chemical methods, and advanced cultural methods we may soon make an invasion of the kingdom—an invasion that may lead to chemotherapeutic agents to combat these puzzling devils.

#### IODINE-125

A new radioisotope, Iodine-125, has been developed by Dr. Paul V. Harper, professor of surgery, University of Chicago. The new isotope will be produced at the AEC installation, Oak Ridge, Tenn.

The chief advantage of Iodine-125 is that it emits so-called "soft x-rays" with only 10 percent of the radiation dose rate of Iodine-131 which is being used to a great extent these days. Another advantage is its long shelf life (60 days as against 8 day half-life). It is also said to give clearer pictures of liver tumors.

#### NEW ITEM

*Dosimeter* about the size of a fountain pen. Quickly read and can be reset by a charger at any desired time. Of value to anyone working near radiation.

#### PROJECT HOPE

The SS *Hope* has made nine stops to help teach and train Indonesian medical personnel. American medical personnel have performed 600 operations and have seen 16,000 patients either aboard the ship or ashore. Eight hundred classes, lectures, seminars and meetings were held in the classrooms and lecture halls aboard the ship in the first six-months of its operation in the

Indonesian waters. More than 4600 x-rays have been taken.

During June the ship will go to Singapore for resupply and refitting and will remain in that area for two-and-a-half months before it returns to the United States. It is anticipated that the ship will sail again next fall for some port in Asian waters where the volunteer medical personnel and the great amount of medical supplies provided gratuitously by the American pharmaceutical companies will not only alleviate suffering but will aid in training native personnel in American methods of medicine practice.

This is a People-to-People Program sponsored by all Americans either through contributions or service. Headquarters of Project HOPE are at 1818 M St., N.W., Washington 6, D.C.

#### HONORED

Domenic A. Vavala, Ph.D., a member of our Association and Secretary-Treasurer of The National Association of Doctors in the United States, has been listed in the fourth edition of *Leaders in American Science*, "An Illustrated Biographical Directory of Eminent Leaders in Research, Industrial, Governmental, and Educational Scientific Fields in the United States and Canada."

He was recently appointed to the Advisory Board of *Who is Who in Adult Education*.

In December 1960, Dr. Vavala received the Gold Medal of Academic Palms, the highest decoration conferred by Minerva University of Milan, Italy.

#### MEDICAL ALMANAC

A *Medical Almanac*, 1961-1962, compiled by Peter S. Nagan, has been published by W. B. Saunders Company, Philadelphia, at \$5.00 per copy.

This paper bound book ( $7\frac{3}{4} \times 5\frac{1}{4}$  in., 528 pp.) is full of medical statistics and general information on medical societies, journals, boards, schools, etc. There are a number of biographical sketches of prominent physicians. The medical systems of several

foreign countries are discussed. This book is filled with information.

#### PHYSICAL DIAGNOSIS

More emphasis was placed on physical diagnosis in the medical training of the first part of this century. History taking was likewise greatly emphasized and we were told that a good history was half of the job in making a diagnosis. Somehow or other with the progress made in the laboratory more and more importance was attached to the laboratory reports and the physical diagnosis and history taking were de-emphasized. Or maybe we just got lazy.

The history and the physical diagnosis are still very important. Now the Audio-Visual Utilization Center, Wayne State University, Detroit, has prepared a series of six films on physical diagnosis. This project was sponsored by Ciba Pharmaceuticals, Inc., but the work is that of the University. The films may be borrowed or purchased from that University. The six titles are: "Introduction to Speech Disorders," "Communicable Disease," "Gait and Musculo-Skeletal Disorders," "Disorders of Motility," "The Ear and Hearing," and "The Larynx."

#### LEGAL MEDICINE COURSE

The University of Chicago is offering a home study course in *Legal Problems in the Practice of Medicine*. Further information can be obtained by writing to: Home Study Dep't., University of Chicago, Desk LSE, 60th and Dorchester, Chicago 37, Illinois.

#### REUNION

The 95th Infantry Division Association will hold its 12th Reunion at the Chase Park Plaza Hotel, St. Louis, Mo., August 18-20. The Chairman is Richard H. Martin, Granite City, Ill.

#### CIVIL DEFENSE MEETING

The Fourth International Civil Defense Conference will be held in Montreaux, Switzerland, October 7-17, 1961. For further information address The Secretary General, Case postale Eaux-Vives, Geneva, Switzerland.

## AMERICAN CANCER SOCIETY MEETING

"The Physician and the Total Care of the Cancer Patient" is the topic for the Scientific Session of the American Cancer Society which will meet at the Biltmore Hotel, New York City, October 23-24.

Further information may be obtained by writing to: Professional Education Section, American Cancer Society, 521 West 57 Street, New York 19.

## MEDICAL BOOK AND PERIODICAL COST

"In 1960 the average American medical book cost \$8.41, or \$2.05 more than its counterpart in 1949; the average cost of a 1960 subscription to an American medical periodical was \$10.28, compared to \$6.94 in 1949" (National Library of Medicine *NEWS*, March 1961). Membership in the Association of Military Surgeons is \$6.00 for those who can qualify. This includes subscription to **MILITARY MEDICINE** (Editor, MM.).

## PATENTS AND GOLD

"I certainly believe that government agencies should not aid in the circumvention of the patent rights of American firms, particularly, as in the pharmaceutical field, where these rights are based upon costly research. This seems especially urgent at a time when this country is concerned about its international balance of payments and the loss of gold. . . ." U. S. Senator Clifford P. Chase, in *PR*, Apr. 17/61.

## TETANUS AND BOOKS

The devotion of library patrons sometimes surpasses understanding. A limping lady at a rural bookmobile stop, explained she had that morning stepped on a rusty nail, but treatment would have to wait—after all, the deadline for tetanus shots was 48 hours, and the bookmobile's deadline was noon!

*San Antonio Public Library Bulletin.*  
From Quote 4/16.

## New Members

Maj. Lloyd W. Dezarn, Jr., MSC, USA  
1/Lt. Paul T. Jung, MSC, USA

Lt. Col. Howard J. Funston, MSC, USA

Maj. Leon W. Enderlin, MSC, USA

Lt. Col. Reese V. Scott, MSC, USAR

Cdr. Bernard A. Halperin, MC, USNR

Capt. Binning P. Chambers, USAF, MSC

Col. Donald E. Hoganson, MC, ARNGUS

Frederick C. Coller, M.D., (former Capt., MC, AUS, sep.)

Capt. David H. Jones, MSC, NYARNG

Maj. Henry C. Vaughn, Jr., MSC, USA

LCdr. Daniel J. Enger, MC, USNR

Maj. Henry C. Bright, MSC, USAR, Ret.

Lt. Col. William R. Finks, AUS, Ret.

1/Lt. Ronald Lee Markwood, MSC, USA

1/Lt. Jerome A. Montana, MC, USAR

Capt. Hopeton S. Hibbert, DC, USA

Capt. Howard L. Bresler, MC, USAFR

1/Lt. Edgar M. Fox, MSC, USAFR

Col. Abraham Atsmon, MC, USAR

Capt. Ross M. McFadyen, MSC, USA

1/Lt. Leonard C. Sisk, MSC, USA

Lt. Murray W. Lufkin, MC, USN

Maj. Lynn R. Cheezum, MSC, USA

Maj. William Louis McCray, MSC, USAR

Capt. Joseph P. Crisalli, USPHS, OPC

Sr. Dent. Surg. Robert C. Likins, USPHS

1/Lt. Daniel J. Roach, O.D., MSC, USA

Capt. Betty F. Morgan, ANC, USA

Capt. Sumner C. Kraft, MC, USAR

Capt. Louis G. Neft, MC, USAF

Lt. Col. Leonard Dale McLin, MC, USAF

Maj. Catherine Harris, ANC, USA

Capt. Rodolph Mullins, MSC, USA

Lt. Col. S. M. Bunson, MSC, USA

Capt. Martin E. Baurer, M.D., MC, USA

Capt. Edward J. Wajda, MC, USAR

Maj. Fu-Chi Kuo, R.N.

Col. Monroe Marshall Kissane, MC, USAR

Maj. Alice D. Kinghorn, ANC, USAR

Maj. Rafael R. Gamso, M.D., MC, AUS

Capt. Eileen Bonner, ANC, USAR

Col. Joseph S. Diasio, M.D., AUS Ret.

Capt. Alfred Emanuel Greenwald, M.D., MC, AUS

Col. Nathan Samuels, MC, USAR

Capt. Max E. Mitchell, DC, AUS

## MEMBERSHIP COMMITTEE

Commander Calvin F. Johnson, MSC, U. S. Navy, Chairman  
 Mr. George F. Archambault, U. S. Public Health Service  
 Commander Burdette M. Blaska, NC, U. S. Navy  
 Colonel Jesse W. Brumfield, MSC, U. S. Army  
 Lt. Col. Nathan Cooper, U. S. Air Force (MSC)  
 Lt. Col. V. Harry Adroumie, USAF, MSC  
 Mr. Vernon O. Trygstad, Veterans Administration

Hospital, Letterman General Hospital, Walter Reed General Hospital, and Tripler General Hospital. After his retirement he was on the pathology staff of Maryland General Hospital at Baltimore.

He is survived by his widow, Oyster Bay, New York, and a daughter.

Interment was in Arlington National Cemetery.

## Deaths

**ALTMAN**, Harold, died March 15. He was 48 years old. Doctor Altman, a native of New York City, received his medical degree from Baylor University College of Medicine in 1936. He specialized in orthopedics. During his World War II service (1941-45) he was Consulting Orthopedist at Fort Jay, and later Chief of Orthopedic Surgery, 8th Station Hospital. After his return to private practice, he became a consultant to the Department of Health, City of New York, and a member of the staff of Columbia University College of Physicians and Surgeons. He resided at 57 Harvard Road, Scarsdale, New York.

**BAKER**, George R., a Medical Corps Officer, U.S. Army, in World War I, died at Tomahawk, Wisconsin, January 9, at the age of 87. He was awarded the Purple Heart and cited by General Pershing for "exceptionally meritorious and conspicuous service as a surgeon."

**FOUCAR**, Frederick H., Colonel, Medical Corps, U.S. Army, Retired, died of a myocardial infarction at the Veterans Administration Hospital, Brooklyn, April 1, at the age of 77.

Colonel Foucar, a native of New York, received his medical degree from Columbia University in 1907. He entered on active military duty in the Army in September 1910, and served during both World Wars, retiring as Chief of the Laboratory and Pathology Service at the First Army Area Laboratory in New York in 1947. During his 37 years of active duty, he headed the pathology laboratories at Fitzsimons General

**GENTRY**, Ernest R., Colonel, Medical Corps, U.S. Army, Retired, died at Walter Reed General Hospital, Washington, March 31, at the age of 76.

Dr. Gentry was a native of Minneapolis, Kansas. He graduated from the University of Kansas and the Johns Hopkins University School of Medicine (1909). He entered the Army Medical Corps in September 1909 and served until his retirement on September 30, 1946. In 1911, he with Captain (later Colonel) Thomas L. Ferenbaugh discovered the first case of Malta Fever in the United States and showed the disease to be endemic in the Southwest part of our country. His specialization in Internal Medicine brought him to important positions in Army general hospitals, the Surgeon General's Office of the Army, and later, after retirement with the Veterans Administration where he became chief of the division of medicine in Washington. He served with the Veterans Administration until 1952.

He is survived by his widow, 3605 Saul Hills Road, Kensington, Maryland, and two daughters.

**GENTZKOW**, Cleon J., Colonel, Medical Corps, U.S. Army, Retired, died at Walter Reed General Hospital, Washington, April 8. His age was 70.

Colonel Gentzkow, a native of Minnesota, received his medical degree from George Washington University in 1915, and a Ph.D. degree from Massachusetts Institute of Technology in 1929. He entered on active military duty in July 1917. He retired in August 1948.

He is survived by his widow, 6445 Luzon Avenue, N.W., Washington, D.C.

VAN SANDT, Max, Medical Director, U.S. Public Health Service, died at Walter Reed General Hospital, April 22. He was 57.

Dr. Van Sandt was a native of Wewoka, Oklahoma, and received his medical degree from the University of Cincinnati in 1930. He joined the Public Health Service in 1948. He served in Alaska and at several Indian hospitals in Arizona and the Dakotas. From 1954 through 1958 he was detailed to the Federal Civil Defense Administration where he held positions in the medical service. His most recent duty was that of Liaison Medical Officer, Special Projects Branch, U.S. Public Health Service, which included Medical Director to the Atomic Energy Commiss-

sion—Maritime Administration for N/S *Savannah* (nuclear powered merchant ship) Program and Emergency Operations Program of the Special Projects Branch, Division of Radiological Health.

He is survived by his widow, 2475 Virginia Avenue, N.W., Washington, D.C., a daughter and two sons. Interment was in Arlington National Cemetery.

WESCOAT, George, N.A., Lieutenant Commander, Medical Corps, U.S. Navy Reserve, Retired, died at Moorestown, New Jersey, March 23. His age was 62. Doctor Wescoat had maintained an office at 202 West Main Street, Moorestown.



**1960 PARALYTIC POLIOMYELITIS WITH RESIDUAL PARALYSIS  
IN THE UNITED STATES BY VACCINATION HISTORY  
AND AGE GROUP**

Age Group	Doses of Vaccine							
	0	1	2	3	4+	Unk	Total	Percent
0-4	556	100	121	115	41	19	952	43.0
5-9	222	30	52	134	68	8	514	23.2
10-14	52	18	12	56	32	4	174	7.9
15-19	72	9	8	17	4	3	113	5.1
20-29	189	24	14	23	9	5	264	11.9
30-39	105	7	9	10	6	3	140	6.3
40+	52	—	—	1	—	3	56	2.5
Unk.	4	—	—	—	—	1	5	—
<b>Total</b>	<b>1,252</b>	<b>188</b>	<b>216</b>	<b>356</b>	<b>160</b>	<b>46</b>	<b>2,218</b>	<b>100.0</b>
<b>% Doses</b>	<b>57.6</b>	<b>8.7</b>	<b>9.9</b>	<b>16.4</b>	<b>7.4</b>	<b>—</b>	<b>100.0</b>	

*Morbidity & Mortality Weekly Report  
USPHS April 21/61*

**IT PAYS TO IMMUNIZE AGAINST POLIO  
VACCINATE NOW**

In the first 18 weeks of 1961 there were 85 cases of paralytic polio; in the same period of time in 1960 there were 196 cases.

## NEW BOOKS

When ordering books through our association please state author and publisher in addition to title.

*Biological Effects of Microwave Radiation.* Vol. II. Edited by Mary Fouse Peyton. Plenum Press, New York. Price \$10.00.

*Synopsis of Oral Pathology.* By S. N. Bhaskar, B.D.S., D.D.S., M.S., Ph.D. The C. V. Mosby Company, St. Louis. Price \$9.75.

*Management of Hypertensive Diseases.* By Joseph C. Edwards, A.B., M.D., F.A.C.P., F.A.C.C., with Foreword by Paul Dudley White. The C. V. Mosby Company, St. Louis. Price \$15.00.

*Psychophysiological Aspects of Space Flight.* Edited by Bernard E. Flaherty, Lt. Colonel, USAF, MC. Columbia University Press, New York. Price \$10.00.

*Haematology.* By R. B. Thompson, M.D., F.R.C.P. J. B. Lippincott Company, Philadelphia, sole North American distributors. Price \$6.00.

*Traumatic Lesions of Peripheral Vessels.* By Carl W. Hughes, A.B., M.D., and Warner F. Bowers, A.B., B.Sc., M.D., M.S., Ph.D. Charles C Thomas, Springfield, Ill. Price \$8.00.

*Assault On The Unknown.* By Walter Sullivan. McGraw-Hill Book Company, Inc., New York, Toronto, London. Price \$7.95.

*American Lectures in Living Chemistry.* A series of 30 monographs by international authorities now available with many more to be published in next two years. This series is directed to the physician. It is applied science to clinical medicine. For list of subjects and prices of monographs address the publisher: Charles C Thomas, Springfield, Ill.

*Science in Space.* Edited by Lloyd V. Berkner and Hugh Odishaw. McGraw-Hill Book Company, Inc., New York, Toronto, London. Price \$7.00.

*Advances in Blood Grouping.* By Alexander S. Wiener, M.D., F.A.C.P. Grune & Stratton, New York, London. Price \$11.00.

*Recent Advances in Human Nutrition.* By J. F. Brock, D. M. (Oxon.), F.R.C.P. (Lond.); with 14 contributors. Little, Brown and Company, Boston. Price \$11.50.

*Surgery of the Acute Abdomen.* By John A. Shepherd, V.R.D., M.D., ChM. (St. And.), F.R.C.S. Ed., F.R.C.S. Eng, QHS, with a Foreword by Sir Zachary Cope, M.D., M.S., F.R.C.S. The Williams and Wilkins Company, Baltimore. Price \$18.50.

*What a Girl Should Know About Sex.* By Bernhardt S. Gottlieb, M.D. Bobbs-Merrill Company, Inc., Indianapolis. Price \$3.25.

*A Stereoscopic Atlas of Human Anatomy. Section V. The Abdomen.* By David L. Bassett, M.D. Sawyer's Inc., Portland, Oregon. Price \$16.50.

*Cardiopericardiomypexy.* By Dr. Aaron N. Gorelik; in collaboration with Prof. Camille Lian (Paris), Prof. Louis Thieblot (Clermont-Ferrand), Dr. Mendel Jacobi (New York), Dr. Ralph Ricciardi (New York) and Dr. Madeleine Hascher (Paris). Myopexy Association Inc., New York. Price not stated.

*Atlas of Obstetric Technic.* By J. Robert Willson, M.D., M.S. The C. V. Mosby Company, St. Louis. Price \$14.50.

*Intra-Abdominal Crises.* By Kenneth D. Keele, M.D., F.R.C.P., and Norman H. Matheson, F.R.C.S., M.R.C.P., F.A.C.S. Butterworth Inc., Washington, D.C. Price \$10.00.

*An Atlas of Bronchoscopy.* By A. Huzly, M.D. Grune & Stratton, Inc., New York, London. Price \$12.50.

*Manson's Tropical Diseases.* A Manual of the Diseases of Warm Climates. 15th Ed. Edited by Sir Philip H. Manson-Bahr, C.M.G., D.S.O., M.A., M.D., D.T.M., and H. Cantab, F.R.C.P. Lond., M.D. (Malaya-Hon. Causa). The Williams & Wilkins Company, Baltimore, exclusive U.S. agents. Price \$15.00.

*District Nursing.* A Handbook for District Nurses. 3rd Ed. By Eleanor Jeanette Merry, O.B.E., S.R.N., S.C.M., M.C.S.P., Q.N., & H V. Certs., and Iris Dundas Irven, S.R.N., S.C.M., Q.N., & H. V. Certs. The Williams & Wilkins Co., Baltimore, exclusive U.S. agents. Price \$6.00.

*The Human Cerebellum.* An Atlas of Gross Topography in Serial Sections. By Jay B. Angevine, Jr., Ph.D., Elliott L. Mancall, M.D., and Paul I. Yakovlev, M.D. With a Foreword by Raymond D. Adams, M.D. Little Brown and Company, Boston. Price \$15.00.

*Medical Almanac 1961-1962.* Compiled by Peter S. Nagan, A.B., M.A., M.S. W. B. Saunders Company, Philadelphia, London. Price \$5.00.

*Elementary Textbook of Anatomy and Physiology Applied to Nursing.* By Janet T. E. Riddle, R.G.N., R.F.N., O.N.C. The Williams & Wilkins Company, Baltimore, exclusive U.S. agents. Price \$3.50.

*Quaestionarium Medicum.* By F. Meyboom. With Foreword by L. Dostert, S. Stelling-Michaud, Prof. Dr. R. Brummer, and Prof. Pierpaolo Luz-

zatto-Fegis. D. Van Nostrand Company, Inc., Princeton, N. J., sole distributors for the United States. Price \$6.00.

*Direct Analysis and Schizophrenia; Clinical Observations and Evaluations.* By O. Spurgeon English, M.D., Warren W. Hampe, Jr., M.D., Catherine L. Bacon, M.D., and Calvin F. Settlage, M.D. Grune & Stratton, New York, London. Price not stated.

*Non-Infective Disease in Africa.* The peculiarities of medical non-infective diseases in the indigenous inhabitants of Africa south of the Sahara. By H. C. Trowell, O.B.E., M.D. (London), F.R.C.P. The William & Wilkins Co., Baltimore, exclusive U.S. agents. Price \$13.00.

*Manual of Clinical Bacteriology.* By Alexander Kimler, Ph.D. J. B. Lippincott Company, Philadelphia, Montreal. Price \$4.75.

*Of Garry Owen in Glory.* The Complete History of the 7th U. S. Cavalry Regiment. By Lt. Col. Melbourne C. Chandler, USA. 7th U. S. Cavalry Association, P.O. Box 6243, Arlington 6, Va. Price \$10.50.

*Metabolic Effects of Adrenal Hormones.* Ciba Foundation Study Group No. 6. Editors: G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Maeve O'Connor, B.A. Little, Brown and Company, Boston. Price not stated.

*Adrenergic Mechanisms.* Ciba Foundation Symposium jointly with Committee for Symposia on Drug Action. Editor for British Pharmacological Society, J. R. Vane, B.Sc., D.Phil.: Editors for Ciba Foundation, G.E.W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Maeve O'Connor, B.A. Little, Brown and Company, Boston. Price \$12.50.

*Calculations in Pharmacy.* By Sue H. Rouse, M.S., and M. George Webber, Ph.D. J. B. Lippincott Company, Philadelphia, Montreal. Price \$5.00.

*A Manual of Cutaneous Medicine.* By Donald M. Pillsbury, M.A., D.Sc. (Hon.), M.D., F.A.C.P.; Walter B. Shelley, M.D., Ph.D., F.A.C.P.; and Albert M. Kilgman, M.D., Ph.D. W. B. Saunders Company, Philadelphia, London. Price \$9.50.

*Clinical Disturbances of Renal Function.* By Abraham G. White, M.D., F.A.C.P. W. B. Saunders Company, Philadelphia, London. Price \$10.50.

*Chest Pain: Systematic Differentiation and Treatment.* By Nathaniel E. Reich, M.D., F.A.C.P., F.C.C.P., and Rudolph E. Fremont, M.D., F.A.C.P., F.C.C.P. The Macmillan Company, New York. Price \$9.00.

*Jet Tanker.* By Lt. Colonel Grover Heiman, U.S. Air Force. Holt, Rinehart and Winston, New York. Price \$3.50.

*Essential Hypertension.* An International Symposium, Berne, June 7-10, 1960. Sponsored by Ciba. Edited by K. D. Bock (Basle), and P. T. Cottier (Berne). Ciba, Summit, N. J. Price not stated.

*Diagnostic Cytology and Its Histopathologic Bases.* By Leopold G. Koss, M.D., In Association with Grace R. Durfee, B.S. J. B. Lippincott Company, Philadelphia, Montreal. Price \$16.50.

*American Men of Medicine.* Third (1961) Edition of Who's Important in Medicine. 10,000 biographies. Institute for Research in Biography, Farmingdale, N.Y. Price \$20.00.

*World Directory of Venereal-Disease Treatment Centres At Ports.* 2d Ed. WHO publication. Columbia University Press, International Documents Service, New York. Price \$1.75.



## BOOK REVIEWS

**INFECTIOUS DISEASES OF CHILDREN.** 2nd Ed.  
By Saul Krugman, M.D., and Robert Ward,  
M.D. 298 pp., illust. The C. V. Mosby Company,  
St. Louis. Price \$13.00.

Most medical reference books and textbooks have not been revised frequently enough to keep pace with rapid advances in medical knowledge. However, this book has been widely changed and added to in just two years after the initial edition in order to stay abreast of this phase of medicine. New chapters have been added and major changes have been made in many sections. For example, an entirely new chapter on acute respiratory infections due to viral agents whose etiological significances have not been appreciated has been added. Much additional timely information has been compiled on many of our common types of infectious diseases affecting children. Excellent discussions of the difficult problems facing the physician concerning rabies treatment, control of communicable diseases, immunizations, management of severe and/or resistant infections, and recently recognized complications of antibiotic therapy in the premature and newborn infant are given.

As in the first edition emphasis is on a practical clinical approach to infectious diseases such as their diagnosis and therapy. Many excellent illustrations are given as well as color plates of such things as many of the signs, laboratory findings and clinical courses of many of these diseases.

This book should be an informative addition to the libraries of pediatricians, general practitioners, medical students or anyone who deals with children's illnesses. It is concise, well-balanced and arranged for easy reference to complete descriptions of most of the common infectious diseases of children in this section of the hemisphere.

ALBERT E. HENSEL, JR., M.D.

**ATLAS OF CLINICAL HEMATOLOGY.** By Katsuji Kato, Ph.D., M.D. 296 pp., 92 colored plates. Grune & Stratton, New York and London. Price \$25.00.

This atlas is, without a doubt, the finest one on blood and bone marrow cell morphology that I have seen.

Dr. Kato has combined his precise and delicate artistic skill with infinite patience in picturing the cells of the blood and their precursors in health and in disease. The plates represent some twenty-five

years of work on smears of patients with blood dyscrasias who came to the Bobs Roberts Hospital at the University of Chicago, and had been assigned to Dr. Kato for care and treatment.

These drawings and others made from smears loaned to him by fellow hematologists were first shown as a Scientific Exhibit at the annual convention of the American Medical Association held in San Francisco in 1938. They were later published in two volumes (1954 and 1958) in Japan as an atlas. The drawings were made under uniform conditions of staining and magnification.

The plates have been reduced to a uniform magnification of 1000 $\times$ . Each plate has been printed on the right side of the page, with an outline drawing of the cells on the opposite page. The important cells are identified by appropriate abbreviations of their names. Accompanying each plate is a brief introductory description of the disease which includes the essential clinical and morphological characteristics. Each plate represents a composite of characteristic cells seen in the blood and bone marrow in any one particular disease. Thus, one has the opportunity of closely comparing the various cell entities and better developing his microscopic eye. This, coupled with the author's remarkably true reproduction of the cells makes the book very desirable, both to the beginning hematologist as a guide and to the skilled morphologist as a ready reference and pleasurable browsing.

COL. JOSEPH H. AKEROYD, MSC, USA

**LIPIDS AND THE STEROID HORMONES IN CLINICAL MEDICINE.** Proceedings of an Applied Seminar of the Association of Clinical Scientists. Edited by F. William Sunderman, M.D., Ph.D., Sc.D.; and F. William Sunderman, Jr., M.D. J. B. Lippincott Company, Philadelphia and Montreal. Price \$10.75.

This book primarily deals with methodology for determining the presence and amount of lipids and steroids in body fluids. There are only a few brief, concise discussions correlating the present concepts of the lipid and the steroid hormones to clinical medicine. Such brief references of clinical correlation appear to be directed more toward an orientation for the laboratory scientist rather than for the clinician.

This book represents the edited proceedings of an applied seminar of the lipids and the steroid hor-

mones in clinical medicine held in Washington, D.C., under the auspices of the Association of Clinical Scientists. The methods included in the book have been evaluated in laboratories of members of the Association and were demonstrated in the course of the applied seminar.

This book would be of special interest to those physicians engaged in laboratory studies and who wish a concise, up-to-date reference on methodology.

COL. D. O. LYNN, MC, USA

**FUNDAMENTALS OF CHEST ROENTGENOLOGY.** By Benjamin Felson, M.D. 301 pp., 450 illust. W. B. Saunders Company, Philadelphia and London. Price \$10.00.

This book tells the reader how to interpret the shadows in chest x-rays, and though packed with information and "pearls" of knowledge, is interesting and easy to read.

It is not intended by the author to be a source book on chest disease, but as the title indicates, to point out the basic principles of chest x-ray interpretation. The first chapter is quite properly devoted to comments on the value and use of various methods of chest examination, since one cannot interpret what is not recorded on the film. The chapter is brief and presupposes familiarity with equipment and terminology. It covers not only fluoroscopy and usual and unusual roentgenographic projections, but indicates the place of bronchography, laminagraphy, pneumothorax and angiography.

The remainder of the book, except for "Burzinski's used tombstone" is devoted to description of the normal anatomy and its alterations in disease, as they appear on the chest film. The segmental anatomy of lobes and bronchi, the intrapulmonary arteries, veins and lymphatics, the hilus and lymph nodes, the pleura covering and septa, the extrapleural space, and diaphragm, are all considered in a refreshing and interesting manner with the use of mnemonic terms. There is a chapter on special signs such as the butterfly shadow, the pulmonary meniscus, the sail shadow, and the double lesion sign.

An exceptionally attractive segment of the book is that on the intrapulmonary vessels. This chapter pulls together a great deal of information on the appearance of the arteries, veins, and lymphatics, the significance of which has been appreciated fully only recently in the light of angiographic and catheterization data. A surprising amount of pathophysiology can be deduced or suspected from these shadows in the plain film. The extrapleural space also is given exceptionally good coverage.

Throughout, the author stresses the understanding of the anatomy, physiology and pathology of

shadows on the chest film. The recognition of specific diseases is not taught, but the differential diagnosis lists presented are valuable and the discussion is on a distinctly clinical level.

The format and type are attractive. The illustrations are excellent and rewardingly numerous. A valuable list of over 300 references is included. The index is adequate.

The doctor beginning a radiology residency should read this book for an appreciation of the field of chest roentgenology. He will want to reread it a number of times. It is a "must" for the senior resident. It is recommended to the experienced radiologist or practitioner of chest diseases who will find in it review and confirmation of his own experience, as well as new viewpoints and new information.

LT. COL. L. C. HAMILTON, MC, USA

**DISEASES OF THE NEWBORN.** By Alexander J. Schaffer, M.D., with a Section on *Neonatal Cardiology* by Milton Markowitz, M.D. 878 pp., illust. W. B. Saunders Company, Philadelphia and London. Price \$20.00.

One of Baltimore's leading pediatric practitioners for the past 30 years, Doctor Alexander J. Schaffer, has written a large book on what he calls "the last frontier in medicine." He refers to the diagnosis and management of the newborn, that tough but sometimes so fragile creature. The problems of the neonate are frequently encountered and important, as attested by the staggering mortality figures for this first period of life. Currently these physiologic and pathologic changes are being vigorously investigated. The past 10 years have brought many advances and it is opportune that they have now been assembled and crystallized in a book.

The book was originally intended as a picture atlas of diseases and conditions confronting the neonatologist (Dr. Schaffer's coined word); however, there was so much to present which couldn't be delineated pictorially that the text proliferated. As a result, the book contains an abundance of excellent illustrations (some in color) which often tell most of the story. The supplementing text is brief and explicit.

All is written with the practitioner in mind. Diagnosis, treatment and methods of management peculiar to the newborn's situation are emphasized. Many illustrative cases from the author's experience are used to highlight important points. Disorders of the neonate are discussed system by system, but in selected fashion. The author has chosen to present certain parts of his thesis in detail, those which he considers most important, and does not pretend to be encyclopedic. Thus, there is a spotty character to the book and it would not suffice by itself as a complete reference book.

A nice section on cardiovascular diseases in the newborn is contributed by Dr. Milton Markowitz, the only collaborating author. Another section discussing the vital problem of jaundice in the neonate deserves special mention.

At the end of the book are found appendices which will be very useful to physicians who are responsible for a newborn service or who teach. They epitomize the principles of newborn care, resuscitation of the newborn, management of erythroblastosis fetalis and drug dosages for the newborn.

Each chapter has a selected bibliography and there is a complete index. The book is handsomely bound and is printed on heavy slick paper.

"Diseases of the Newborn" is recommended for pediatric residents and pediatricians. It will be a useful reference in pediatric libraries. Because of its narrow focus, it would not appear to be as useful to student, intern or general practitioner as one of the standard pediatric texts.

MAJ. EDWARD J. TOMSOVIC, MC, USA

**SURGERY OF THE AORTA AND ITS BRANCHES.** By James D. Hardy, M.S.(Chem), M.D., F.A.C.S. 386 pp., illust. J. B. Lippincott Company, Philadelphia and Montreal. Price \$6.50.

This handy-sized book is divided into seven parts; namely, (1) a general survey of acquired arterial diseases and techniques in their surgical treatment; (2) occlusive disease of the innominate, carotid, subclavian, and vertebral arteries; (3) diseases involving the arteries of the upper extremities; (4) occlusive disease of the celiac, superior mesenteric, renal, iliac, femoral, and more distal arteries; (5) aneurysms; (6) arterial embolism; and (7) arterial injuries, including a discussion of arteriovenous fistulae and causalgia.

The book is a lucidly-written treatise on the subject, designed for the most part, to familiarize the physician with what is available from vascular surgery. It is not meant to be exhaustive in coverage for the surgeon or a reference book on surgical technique. On the other hand, a bibliography which appears at the end of each chapter is extensive. There are 75 illustrations and photographs which are well-chosen, simple and conveniently placed. The chapter on aneurysms is particularly well-done, including prognosis in the unoperated case. Possible pitfalls, complications, and necessary ancillary equipment is dealt with in a timely fashion. There is a concise historical background presented to explain the development of various specific surgical approaches at the beginning of each chapter.

This is an excellent book for the neophyte in this field of surgery, or the physician who should have some acquaintance with the type, magnitude, and results of the surgery available to his patient. It also might serve as a ready index to the vascular

surgeon as the bibliography is up-to-date and exhaustive.

LT. COL. THOMAS J. WHELAN, MC, USA

**MEDICAL-SURGICAL NURSING.** 2nd Ed. By Kathleen N. Shafer, R.N., M.A.; Janet R. Sawyer, R.N., A.M.; Audrey M. McCluskey, R.N., M.A.; and Edna L. Beck, R.N., M.A. 876 pp., 141 illust. The C. V. Mosby Company, St. Louis. Price \$8.75.

The authors have achieved their purpose in providing the student with nursing knowledge rather than medical content in this book. However, the medical and surgical disease entities are adequately described with relation to the nursing responsibilities involved in patient care. The book is divided into two sections. Section I is entitled "General Considerations" and contains a fairly comprehensive chapter on the nurse's role with regard to the patient requiring rehabilitation.

The contents of the chapters "Fluid and Electrolyte Balance," "The Patient With Pain," and "The Unconscious Patient" are complete and well presented. The chapter on "Preoperative Care" would have been enhanced by some mention of rehabilitative instruction of the patient as part of his psychologic preparation pre-operatively. The discussion of disaster nursing and nursing responsibilities is brief but comprehensive.

The remainder of the chapters discuss nursing care of patients with diseases by systems, with relation to treatment, use of equipment, and preventive aspects. The coverage is complete and informative; nursing procedures the student receives in a fundamental nursing course are referred to rather than repeated in this text.

Each chapter is preceded by "Study questions for review" and ends with a comprehensive bibliography. The book does provide the student nurse with nursing knowledge that is patient centered in all facets. It is recommended as an excellent review text for the older graduate and should have a place in the library of all hospitals.

LT. COL. EVELYN M. BEDARD, USAF, NC

**ASPECTS OF PUBLIC HEALTH NURSING.** Public Health Papers No. 4. WHO. By various authors. Published in English and French. 185 pp. Available through Columbia University Press, IDS, 2960 Broadway, New York 27, N.Y. Price \$1.75.

A shortage of nurses is said to exist throughout the world. In the more developed countries increased medical service has called for more nurses. In the less developed countries there is a great demand for women with the special training but because of prejudice against women entering the field of nursing, because of inadequate facilities for their training, and because of the lack of money to pay them if they were trained the nurses cannot be provided in adequate numbers.

The project in many places is to train auxiliary workers who can do many of the jobs where the skill of the nurse is not required. The public health nurse can and should do this training if the health and sanitation of some of these nations is to be improved.

This book describes how these problems have been handled in some of the other countries and and how auxiliary personnel have been trained.

R.E.B.

**PATHOLOGY. A Dynamic Introduction to Medicine and Surgery.** By Thomas M. Peery, M.D., and Frank N. Miller, Jr., M.D. 625 pp. (Paper Bound). Little, Brown and Company, Boston. Price \$5.50.

This text gives a very thorough and comprehensive review of pathology. Although no illustrations are present no phase of pathology has been omitted; every important disease is covered fully and even the most uncommon ones are mentioned, at least briefly. When a particular disease entity is discussed all the clinical manifestations are directly correlated with the pathological findings of that particular condition. Gross and histological findings are described so that one can visualize the essential nature of the pathological entity being discussed.

In addition to these overall section headings, there is a marginal note beside almost every paragraph which makes locating the subject being discussed much easier.

This book has the most current bibliography of any recent book on pathology and I believe any individual interested in the field of pathology will find this book filled with current and useful data.

The authors should be thoroughly commended on this fine book which students will find invaluable as a basis for their further quest for knowledge and those who are further advanced will find that this is a most valuable review of the entire field.

CAPT. J. F. McCABE, MC, USN

**HAEMATOLOGY AND BLOOD GROUPS. Papers from the British Medical Bulletin.** Edited by D. A. G. Galton and K. L. B. Goldsmith. Thirty-five contributors. 169 pp., illust. The University of Chicago Press, 5750 Ellis Ave. Price \$4.00.

The British Medical Bulletin is published three times a year by the Medical Department of the British Council. Each number is devoted to a single topic and is comprised of about 15 review articles, authoritatively and often pleasantly written. The object of these publications was, originally, "to provide a guide to medical work in Britain." Nowadays most of the reviews are still prepared by British authors but they deal with everyone's work.

In 1959 two of the numbers were dedicated to the related fields of hematology and the blood groups. These issues have been reprinted in the

present single volume with only the advertisements left out. Professor L. J. Witts was Chairman of the committee that planned the symposium on hematology, Dr. A. E. Mourant for the symposium on blood groups.

The book is a bargain.

COL. WILLIAM H. CROSBY, MC, USA

**BIOLOGY OF PYELONEPHRITIS.** Henry Ford Hospital International Symposium. Edited by Edward L. Quinn, M.D., F.A.C.P., and Edward H. Kass, M.D., Ph.D., M.A. (hon.), F.A.C.P., 88 contributors. 708 pp., illust. Little, Brown and Company, Boston. Price \$18.00.

The increasing interest in and the importance of the kidney in health and disease is attested to by two recent convocations. The first is the Symposium on Pyelonephritis held at the Henry Ford Hospital, Detroit, October, 1959. The second was the First International Congress of Nephrology, held at Geneva/Evian-les-Bains in September, 1960. It is of further note that many of the 80 contributors at the first symposium in Detroit also participated at the Congress in 1960.

The book reviewed is a report of the papers and discussions presented at the Henry Ford Hospital. The book is divided into seven sections which deal with the latest thinking on pyelonephritis: the anatomy of the kidney, the causes both organic and biological; treatment; and the effect of pyelonephritis on other clinical states. Of especial interest to this reviewer was the interchange between the urologists and internists vis-a-vis catheter use and its (supposed) hazard; the lymphatic drainage system of the urinary system; and the use of mandelic acid, together with metheneamine against chronic urinary infections. Each section is followed by an excellent summation of the topic discussed.

The book is stimulating, well presented, and authoritative. While one may not agree with all the viewpoints expressed, it gives one food for thought. It appears to be an excellent monograph and deserves a place in the library of all workers interested in the problems of the kidney and its diseases, clinicians as well as research workers.

ALAN L. KLEIN, M.D., USPHS

**THE DISPENSATORY OF THE UNITED STATES OF AMERICA.** 1960 Ed. New Drug Developments Volume. By Arthur Osol, Ph.G., Ph.D., Robertson Pratt, A.B., Ph.D., with Karl H. Beyer, Jr., M.D., Ph.D.; George E. Farrar, Jr., M.D., F.A.C.P.; G. Victor Rossi, Ph.D.; and Heber W. Youngken, Ph.D., Sc.D. 240 pp. J. B. Lippincott Company, Philadelphia and Montreal. Price \$9.00.

The 25th Edition of U.S.D. was published 5 years ago. In its typical fashion it covered drugs and their preparations which were official, or which

are in extensive use at this time. This second volume lists 206 new entries that have developed and become important during this interval. The same style is used as in U.S.D.; that is the names and synonyms, structural formula, description, actions, side effects, toxicology, dose, dosage forms, and other pertinent data about each product. By bringing out this second volume, to supplement the information in the 25th Edition. The usefulness of both books is emphasized. In addition, supplemental data have been made available, to extend the information in Volume 1.

In addition to discussions on specific drugs, surveys are reported on antibiotics, hypoglycemic agents, psychotherapeutic and psychotomimetic drugs and saluretic agents, which are helpful in obtaining a quick survey of available information in these fields.

The U.S.D. continues to be a respository of useful pharmaceutical information.

JAMES C. MUNCH

**ESSENTIALS OF PHARMACOLOGY.** 4th Ed. By Frances K. Oldham, Ph.D., M.D., and F. E. Kelsey, Ph.D., and E. M. K. Geiling, Ph.D., M.D. 418 pp. J. B. Lippincott Company, Philadelphia and Montreal.

The three previous editions of this book have had wide acceptance by students and teachers, and has wide use as a reference text, even after graduation from medical school. This book was developed as an introductory text to Pharmacology; therefore it is rather distinguished by the omission of many of the less important drugs, as well as by the care in selection and presentation of information on the more important ones. Because of their own experiences, the authors have suggested pharmacodynamic mechanisms for many drugs, when known; also indicated directions for further investigations. They have been properly critical of clinical claims throughout the book. (In discussing hypertension on page 179 "A variety of drugs have been recommended. . . . Usually, the results have been disappointing, and as yet no drug is available that regularly produces a sustained lowering of blood pressure in hypertensive patients without producing toxic symptoms.")

After developing the historical era of pharmacology, attention is directed to sources of drugs, metabolism, control, dispensing and administration. This is followed by 30 chapters dealing with anesthesia, hypnotics, analgesics, hallucinogens and tranquilizers, drugs acting on the nervous system, heart, diuretics, blood and blood forming organs, endocrines, vitamins, anti-infectives, anthelmintics and allied drugs and antibiotics, among others. Each chapter is a complete unit, listing preparations discussed in this connection, with dosage and a

brief but pertinent bibliography. As a quick review of basic information in any area of pharmacology, this book can be recommended.

JAMES C. MUNCH

**EVERY SERVICEMAN'S LAWYER.** By Major Earl Snyder, A.B., LL.B., LL.M., Judge Advocate, U. S. Air Force. 341 pp. The Stackpole Company, Harrisburg, Pa. Price \$3.50.

Major Snyder, Judge Advocate, U. S. Air Force, is also a member of the bar of the U. S. Supreme Court, the Court of Military Appeals, and a Barrister-at-law in England. If anyone is qualified to write a laymen's handbook of law for persons in the military service, it is he. This book is divided into four parts appropriately headed "You," "Your Family," "Your Money and Property," and "What Legal Words Mean." In the words of the author this book contains law for you—a non-lawyer. This statement is true. During the course of reviewing this book, I found myself consulting it frequently to resolve questions raised in my own command. It provides good guidance not only in the field of military law but more importantly in the areas of civilian law which military persons are most apt to find puzzling. The legal aspects of overseas service is adequately covered also. This book does not replace consulting the Legal Officer (nor does the author intend it so) but it does complement the Legal Officer's work. Publication of this book is a distinct contribution to the military services.

MAJOR SAMUEL L. CROOK, MSC, USA

**RECENT ADVANCES IN RENAL DISEASE.** The Proceedings of a Conference in London at the Royal College of Physicians of London, 22nd-23rd July 1960. Edited by M. D. Milne. 254 pp., illust. J. B. Lippincott Company, Philadelphia and Montreal. Price \$5.00.

This book is a reprint of the papers presented at the above conference. Nineteen speakers who hold prominent positions in the hospitals and medical schools of England—(London, Manchester, Durham and Birmingham), presented these papers. The following topics were discussed: 1) Renal Function and Structure, including tests of function and renal biopsy; 2) Acute Renal Failure with Use of the Artificial Kidney; 3) Nephrotic Syndrome—pathogenesis and treatment for adults and children; 4) Pyelonephritis—its nature, diagnosis, treatment, and the role of the micturating cystogram; 5) Metabolic Aspects of Renal Disease—i.e., inborn errors of renal tubular function and renal osteodystrophy; 6) lastly, Hypertension and the Kidney, with explanation of the use of radiological means and clearance studies for evaluation of renal function and a discussion of medical and surgical treatment.

The presentation of each major group of papers

was followed by a good discussion. There is also a good bibliography. The book is issued in soft boards and printed on off-set which permits the publishers to offer it at a very reasonable price well within the means of all. It is, in this reviewer's opinion, a worthwhile addition to the growing library of Renal Diseases, their pathology, diagnosis and treatment.

ALAN L. KLEIN, M.D., USPHS

**HUMAN FACTORS IN JET AND SPACE TRAVEL. A Medico-Psychological Analysis.** Edited by S. B. Sells, Ph.D., and Lt. Colonel Charles A. Berry, M.D., USAF, MC; with Foreword by Maj. Gen. Oliver K. Niess, The Surgeon General, U.S. Air Force. Thirteen contributors. 386 pp. The Ronald Press Company, New York 10, N.Y. Price \$12.00.

This book encompasses the efforts of the diverse disciplines which are today gathering data on the human-factor aspects of high performance aircraft. Research and development in this area has been a joint achievement of various fields such as medicine, psychology, engineering, anthropology, chemistry, and physics. This book, being a compilation of papers by authors of different scientific backgrounds, provides personnel working in this field with a unique source of data on human-factor problems.

The early human-factor problems of the conventional piston-propeller era were in the areas of respiratory physiology and acceleration. High performance, i.e., high speed, high altitude, aircraft, have contributed problems in spatial orientation and neurocirculatory functions, comfort, and task simplification. Space travel calls forth further problems in the above areas as well as such considerations as weightlessness, isolation, harmful radiations, space cabin logistics, and escape provisions.

Several chapters written by physicians concern themselves with such topics as "Medical Aspects of Jet and Space Travel," "Preventive Medicine in Jet and Space Travel," "Human-Factors Related to Jet Aircraft," and "Aircraft Accidents and Flight Safety." The contributions of aviation medicine to both civilian and military problems are summarized in these chapters. Engineers contribute such chapters as "The Operational Aspects of Space Flight." The identification of the desirable characteristics of space

flying personnel and of the measures necessary for selection, and training required to achieve these are discussed in a chapter entitled, "Human Requirements for Space Travel."

This book, which is well referenced, not only provides a valuable source of data on the human-factor aspects of high performance aircraft and space vehicles to various personnel directly engaged in this area, but is also of considerable interest to aircraft manufacturers, flying personnel, and physicians at large.

HARRY WEINRAUCH, M.D.

**AERO-SPACE MEDICINE.** Edited by Maj. Gen. Harry G. Armstrong, USAF (Ret.), Formerly Surgeon General, U.S. Air Force. Twenty-one contributing authors. 633 pp. The Williams & Wilkins Company, Baltimore. Price \$18.00.

This is the book we have been waiting for! In 32 concise, well organized chapters, Dr. Armstrong and his contributors have compiled information of extreme value to all physicians practicing in this age. This is *not* merely a fourth edition of Armstrong's previous classic, "Principles and Practice of Aviation Medicine." It is a completely new book, oriented on the aeromedical problems of the present and the future.

All phases of aerospace medicine are covered in an interesting manner. Details concerning the selection and maintenance of air crews, clinical problems related to flyers and passengers, environmental stresses, aeromedical evacuation, aviation toxicology, aircraft accidents, rescue and survival, and aerial hygiene and sanitation are presented. A selected bibliography is included at the end of each chapter.

While most of the contributors are associated with military aviation medicine, the medical problems of civilian aviation are covered in a comprehensive manner. The two final chapters, "Space Medicine," and "Planetary Atmospheres," provide an interesting look to the future. The chapter "Aerial Hygiene and Sanitation," is an epitome of applied global medicine.

There is something in this book for every physician; be he civilian or military, or whether engaged in clinical medicine or research.

COL. SPURGEON NEEL, MC, USA

*why use nose drops?*

**'SUDAFED' acts systemically to relieve  
stuffy noses . . . and dilate the bronchi.**

# **'SUDAFED'**

Pseudoephedrine Hydrochloride

brand

○○○○○○○ **TABLETS** ○○○○

and **SYRUP**

*for nasal and respiratory decongestion*

- Quick relief — 15 to 30 minutes
- Gentle, prolonged action — 4 to 6 hours
- Seldom causes central stimulation

Dosage: adults—60 mg., 3 or 4 times daily  
children (4 mos. to 6 yrs.)—30 mg., 3 or 4 times daily  
infants up to 4 mos. of age—15 mg., 3 or 4 times daily

Supply: 'SUDAFED' brand Pseudoephedrine Hydrochloride  
Tablets—30 mg. sugar-coated, 60 mg. scored

Syrup—30 mg. per 5 cc. teaspoonful

Precaution: Although pseudoephedrine causes  
virtually no pressor effect in normotensive patients,  
it should be used with caution in hypertensives.

Complete literature available on request.



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